

Welcome to the 2020 Online HYSPLIT Workshop (DAY 3 of 4)

The broadcast is scheduled to start at:
08:30 Eastern Daylight Time (EDT) = 12:30 UTC

NOAA Air Resources Laboratory
June 22-25, 2020

Day 3, Introduction (8:30 – 8:45)

Dr. Mark Cohen, Lead Scientist, HYSPLIT Modeling Group

- ☐ Agenda for today
- ☐ Quick recap of logistics
- ☐ Tips, tricks, and some key questions from yesterday
- ☐ ... And then, on to the course!

Workshop guidance and resources posted at

[Workshop Web Page](https://www.ready.noaa.gov/register/HYSPLIT_hyagenda.php)

`https://www.ready.noaa.gov/
register/HYSPLIT_hyagenda.php`

+ this Intro presentation available as a Handout, and on Workshop Web Page

+ Roland's presentation slides available as a Handout, and on Workshop Web Page

Agenda – Day 1

UTC	EDT	Agenda Item
12:30 – 12:45	08:30 – 08:45	Introduction and logistics
12:45 – 13:30	08:45 – 09:30	1. Installing HYSPLIT
13:30 – 14:15	09:30 – 10:15	2. Testing the installation
14:15 – 14:30	10:15 – 10:30	Break
14:30 – 15:15	10:30 – 11:15	3. Gridded meteorological data sets
15:15 – 16:00	11:15 – 12:00	4. Trajectory calculations
16:00 – 17:00	12:00 – 13:00	Break
17:00 – 17:45	13:00 – 13:45	4. Trajectory calculations (continued)
17:45 – 19:00	13:45 – 15:00	5. Trajectory options
19:00 – 19:15	15:00 – 15:15	Break
19:15 – 20:20	15:15 – 16:20	6. Trajectory statistics
20:20 – 20:30	16:20 – 16:30	First day wrap-up / questions

Note: all times are approximate

Agenda – Day 2

UTC	EDT	Agenda Item
12:30 – 12:45	08:30 – 08:45	Comments / questions from previous day
12:45 – 14:15	08:45 – 10:15	7. Air Concentration Calculations
14:15 – 14:30	10:15 – 10:30	Break
14:30 – 15:30	10:30 – 11:30	8. Configuring the CAPTEX simulation
15:30 – 16:30	11:30 – 12:30	Break
16:30 – 17:00	12:30 – 13:00	8. Configuring the CAPTEX simulation (continued)
17:00 – 18:30	13:00 – 14:30	9. Air Concentration Parameter Sensitivity
18:30 – 18:45	14:30 – 14:45	Break
18:45 – 19:30	14:45 – 15:30	10. Alternate Display Options
19:30 – 20:20	15:30 – 16:20	11. Pollutant Transformations and deposition <i>(start this section if time permits)</i>
20:20 – 20:30	16:20 – 16:30	Second day wrap-up / questions

Note: all times are approximate

Agenda – Day 3

UTC	EDT	Agenda Item
12:30 – 12:45	08:30 – 08:45	Comments / questions from previous day
12:45 – 14:15	08:45 – 10:15	11. Pollutant Transformations and deposition
14:15 – 14:30	10:15 – 10:30	Break
14:30 – 16:00	10:30 – 12:00	12. Air Concentration Uncertainty
16:00 – 17:00	12:00 – 13:00	Break
17:00 – 19:00	13:00 – 15:00	13. Source Attribution Methods
19:00 – 19:15	15:00 – 15:15	Break
19:15 – 20:20	15:15 – 16:20	14. Wildfire Smoke and Dust Storms
20:20 – 20:30	16:20 – 16:30	Third day wrap-up / questions

Note: all times are approximate

Agenda – Day 4

UTC	EDT	Agenda Item
12:30 – 12:45	08:30 – 08:45	Comments / questions from previous day
12:45 – 14:05	08:45 – 10:05	15. Radioactive Pollutants and Dose
14:05 – 14:15	10:05 – 10:15	** Special Presentation: <i>An overview of the HySPLIT applications from NCSR Demokritos.</i> Athanasios Sfetsos, NCSR Demokritos, Greece
14:15 – 14:30	10:15 – 10:30	Break
14:30 – 16:00	10:30 – 12:00	16. Volcanic Eruptions with Gravitational Settling
16:00 – 17:00	12:00 – 13:00	Break
17:00 – 18:00	13:00 – 14:00	17. Custom Simulations (Chris Loughner, NOAA ARL, will present section 17.5)
18:00 – 19:00	14:00 – 15:00	** Special Presentation: <i>STILT Demonstration</i> Derek Mallia, University of Utah, United States
19:00 – 19:15	15:00 – 15:15	Break
19:15 – 20:30	15:15 – 16:30	Final wrap-up / questions

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Quick Recap of Logistics


Logistics Summary

- ❑ Workshop resources posted at [Workshop Web Page](#)
 - Recordings, files, handouts, virtual posters, ...
- ❑ Everyone's microphone will remain automatically muted throughout the event
- ❑ We may ask you to *Raise your Hand*, e.g., "Are you done with simulation?"
 - We will then automatically lower everyone's hand.
- ❑ Go-to-Webinar Question Panel: General Workshop questions (private, to staff)
- ❑ [HYSPLIT Forum](#): Questions about HYSPLIT, Graphical User Interface, and Tutorial
 - Post in corresponding section that matches relevant Tutorial section
 - Sign up for a free account if you haven't already done this
 - Details for posting in Workshop Intro handouts (e.g., later in this file)
- ❑ Recordings taking longer than expected to process
 - Likely not available until 18-24 hours after a given session ends
 - Information on viewing videos is on [Workshop Web Page](#), and in Workshop Intro handouts
 - **Note:** Recordings on ARL Web Site will be available much longer than those on Go-to-Webinar server
- ❑ Met data files for special dust simulations posted on the [Workshop Web Page](#)
 - Just click on link to download

Logistics Summary

https://www.ready.noaa.gov/register/HYSPLIT_hyagenda.php

Recordings. Videos of each day's on-line sessions are being created for review by participants, e.g. Processing of the videos to make them viewable takes significant time. There are two places that you be identical:

1. **HYSPLIT Workshop Channel.** ~~This version of each day's video will likely be ready first -- pe~~ and will be available, once it is ready, on the [HYSPLIT Workshop channel](#)  hosted by Go-to-simple Go-to-Webinar registration page where you enter your name and email address, and t
2. **The NOAA Air Resources Laboratory website.** This version of the video may take longer to corresponding entry below will become a link. When you click on one of these links, you shou

▶ [Instructor's presentation slides for days 1 to 4.](#)

▶ [Workshop video recording day 1 \(June 22, 2020\)](#), [Handout for day 1.](#)

▶ Place holder for Day 2 video recording [Handout for day 2.](#)

▶ Place holder for Day 3 video recording. Meteorological data files for dust storm simulation

▶ [1-degree GDAS data spanning from 6/15 to 6/21/2020](#) (572 MB)

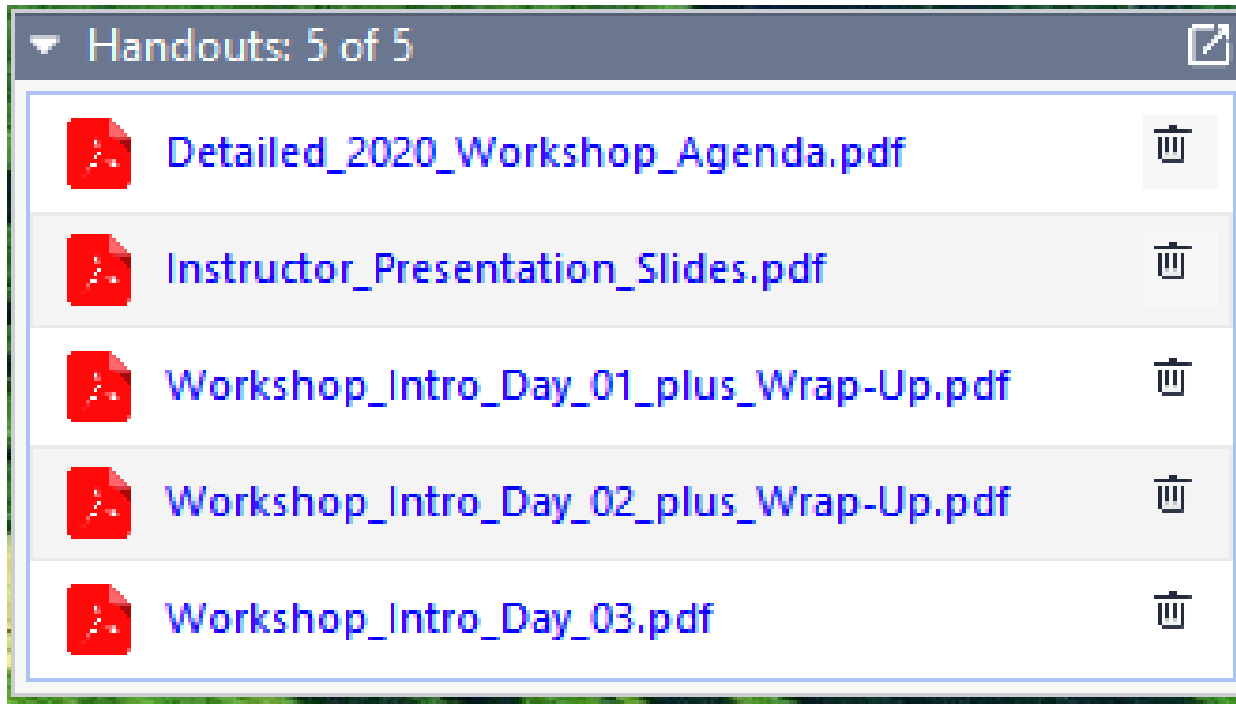
▶ [1-degree GFS forecast for the period from 6/22 to 7/1/2020](#) (776 MB) - This file

▶ Place holder for Day 4 video recording.

Just click on
each link to
download
each of these
met files



Logistics Summary



- ☐ Available as Handouts, within the Go-to-Webinar session,
- ☐ Available on the Workshop Web Page, associated with each day's Recording

Tips, Tricks, and some Key Questions From Yesterday

- ❑ **HYSPLIT mass and concentration units**
 - Tied to whatever you "mean" when you put in the emissions rate.
 - If set emit rate of 2 per hour and you mean 2 kg per hour, then output concentration units are kg/m³, and output deposition units are kg/m²
 - If set emit rate of 2 per hour and you mean 2 grams per hour, then output concentration units are in g/m³, and output deposition units are g/m²

- ❑ All the files associated with the run you just did (or tried to do) are in your **hysplit/working directory** (e.g., CONTROL, SETUP.CFG, MESSAGE, output files, graphics...)
 - Examine CONTROL file in text editor – sometimes you will see an obvious error!
 - If get error saying can't delete MESSAGE file, the MESSAGE file may be open in another application.
 - Also, can try to delete MESSAGE file, and if can't then system may tell you why
 - <https://hysplitbbs.arl.noaa.gov/viewtopic.php?f=3&t=1261&p=3529&hilit=permission+to+delete#p3529>

- ❑ Display > error > **concpplot.ps not found**, it probably means something happened in run and cdump file was not usable (e.g., all zeros, ...)
 - <https://hysplitbbs.arl.noaa.gov/viewtopic.php?f=3&t=1261&p=3529&hilit=permission+to+delete#p3529>

- ❑ **GUI menus have context sensitive HELP** (...takes you to relevant page of Users Guide...)

❑ Multi-page output maps

- ❑ MAC – just scroll down to see each frame
- ❑ Windows – advance page within Ghostview

- <https://hysplitbbs.arl.noaa.gov/viewtopic.php?f=45&t=1888>



❑ **Shortcut:** When Tutorial says save or retrieve a CONTROL or SETUP.CFG file, versions of those same files in: Tutorial > files (but will likely need to adjust directory location for met data file

- <https://hysplitbbs.arl.noaa.gov/viewforum.php?f=46>

❑ if animation fails, you don't have convert.exe or HYSPLIT doesn't know where to find it

- When installing ImageMagick, must "install legacy utilities, e.g., convert.exe"
- Advanced > Configuration Setup > Set Directories (can tell HYSPLIT where a key executable is)
 - <https://hysplitbbs.arl.noaa.gov/viewtopic.php?f=39&t=1891&p=5604&hilit=ImageMagick#p5604>
 - <https://hysplitbbs.arl.noaa.gov/viewtopic.php?f=37&t=1886&p=5579&hilit=ImageMagick#p5579>
 - <https://hysplitbbs.arl.noaa.gov/viewtopic.php?f=37&t=1854&p=5575&hilit=ImageMagick#p5575>

❑ If get too far behind, or too frustrated trying to do your own modeling, and look and listen to Webinar at the same time, it is **ok to view as Demo** and **go back and work through Tutorial on your own** (or with recordings from this Workshop)

- ❑ You must have a concentration layer of 0 in order to get deposition output, even if deposition is included in simulation
- ❑ If particle or trajectory goes off end of met grid, it terminates
- ❑ Can have multiple met grids – HYSPLIT picks best grid for any given point in simulation
 - Finer grid near source (e.g., 3 km, 12 km, 27 km met data sets...)
 - Coarser grid for more remote (e.g., global 1 degree or even 2.5 deg)
- ❑ If your runs are going too slow, reduce particle number from Advanced menu.
 - You won't get the exact same answer, but the runs will go faster.
 - For the purposes of the Workshop, it will be fine in almost all cases to do this
- ❑ Can Search HYSPLIT Forum
 - Place + in front of a word that must be found e.g., MESSAGE +PERMISSION +DELETE
 - Place – in front of word that must not be found e.g., MESSAGE +PERMISSION +DELETE –IMAGEMAGICK
 - Use * as wildcard for partial matches
 - Put words separated by | into brackets if only one needs to be found e.g., [CONTROL|SETUP.CFG] + RETRIEVE
- ❑ Can download met data for simulations on your computer from READY site



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► Volcanic Ash

► Fukushima TCM

► Short-Range
Ensemble Dispersion
Forecasts

► Balloon Flight
Forecasting Tools

► Locusts

► DATEM Tracer
Verification

► HYSPLIT Modeling
Group

► Current & Forecast
Meteorology

► North America

► Animations

► **Archived Meteorology**

>>

Archived Meteorology



Archived Model Graphics

Choose a forecast location by entering a 3 or 4-character station identifier or a 6-digit WMO index number or a latitude/longitude pair and then click the Continue button, or by clicking on the location in the map. You will be taken to the model products section. Information on ARL's data archive is available at <https://www.ready.noaa.gov/archives.php>.

Select a Location

Using a Code Identifier

Airport or WMO ID: [Search for Code](#)

OR By Selecting a U.S. or World City

Or choose a city

OR by Latitude & Longitude

Latitude (degrees) [Convert Deg/Min/Sec into Decimal Degrees](#)

Longitude (West < 0)

Continue

Reset

OR click a location on the map below.



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 - ▣ Short-Range Ensemble Dispersion Forecasts
 - ▣ Balloon Flight Forecasting Tools
 - ▣ Locusts
 - ▣ DATEM Tracer Verification
 - ▣ HYSPLIT Modeling Group
- ▣ Current & Forecast Meteorology
 - ▣ North America
 - ▣ Animations
- ▣ Archived Meteorology
 - ▣ North America
- ▣ Air Quality
 - ▣ U.S Trajectories
 - ▣ Smoke Forecast Verification
- ▣ Emergency Assistance
 - ▣ RSMC Products
 - ▣ RSMC Information
 - ▣ Internal Use Only
 - ▣ Experimental TCMs (NOAA User, Reg. User)
- ▣ READY Status
- ▣ READY Tools
- ▣ Forecast Data Information

Gridded Meteorological Data Archives



Overview

The National Weather Service's National Centers for Environmental Prediction (NCEP) runs a series of computer analyses and forecasts operationally. NOAA's Air Resources Laboratory (ARL) routinely uses NCEP model data for use in air quality transport and dispersion modeling calculations. In 1989 ARL began to archive some of these datasets for future research studies. ARL has in the past, or is presently archiving the following NCEP datasets, which can be retrieved via ftp by clicking on the name of the dataset.

For further information on model changes see the following web sites:

- ▣ <https://www.nco.ncep.noaa.gov/pmb/>
- ▣ <https://www.nco.ncep.noaa.gov/pmb/changes/>
- ▣ <https://www.emc.ncep.noaa.gov/modelinfo/index.html>

Currently Available Data

- ▣ **NAMS Hybrid sigma-pressure archive (CONUS, Alaska, Hawaii, 2010-)**
 - ▣ FTP Data
 - ▣ [NOAA ARL FTP Server](#)
 - ▣ [Readme file](#)
 - ▣ [CONUS grid domain map](#)
 - ▣ [Alaska grid domain map](#)
 - ▣ [Hawaii grid domain map](#)
 - ▣ [Alaska grid domain map \(before 03/21/2017\)](#)
 - ▣ [Hawaii grid domain map \(before 03/21/2017\)](#)
- ▣ **GDAS one-degree archive (Dec 2004 - present)**
 - ▣ FTP Data
 - ▣ [NOAA NOMADS Server \(recent files only\)](#)

Meteorological Datasets Available from NOAA ARL Archives*

(<https://ready.arl.noaa.gov/archives.php>)

	Dataset	Horizontal Resolution (km- approx.)	Full-grid dimensions	Temporal resolution (hrs)	Vertical Levels	Period of each file	Size of each file (GB)	Total size for one month of data (GB)	Availability
North American**	HRRR-3km	3	1799 x 1059	1	37	¼ day	3.2	390	Jun 2015 -> present
	NAMS-12km Hybrid	12 km: Conus 12 km: Alaska 2 km: Hawaii		1	40	1 day	1.0 0.64 0.71	30 19 21	2010 -> present
	NAM-12km	12	614 x 428	3	27	1 day	0.395	12	May 2007 -> present
	WRF-ARW-27km	27	216 x 174	1	35	1 day	0.210	6.4	1980 -> present
	NARR-32km	32	309 x 237	3	24	1 month	2.8	2.8	1979 -> 2019
	EDAS-40km	40	185 x 129	3	27	½ month	0.6	1.2	2004 -> 2018
Global	GFS - 0.25°	27	1440 x 721	3	56	1 day	2.7	82	Jun 2019 -> present
	GDAS - 0.5°	55	720 x 361	3	56	1 day	0.468	14	Sep 2007 -> Jun 2019
	GDAS - 1°	111	360 x 181	3	24	1 week	0.571	2.5	Dec 2004 -> present
	Global Reanalysis - 2.5°	278	144 x 73	6	18	1 month	0.11	0.11	1948 -> present

* These are the most commonly used datasets, but there are other datasets available in the archive, ** All North American datasets cover the Continental United States, but have varying coverage of Canada, Mexico, and adjacent oceanic regions. *** WRF-27km data will most likely continue to be updated.

Thanks to the

IT Team and the **HYSPLIT Team**

of the NOAA Air Resources Laboratory
for providing behind-the-scenes support
throughout this Workshop

*...we will try our best to answer all of your questions,
but we ask for your patience, as there are 100's of
people in this Workshop and only a few of us...*

Course Instructor

Roland Draxler

NOAA Air Resources
Laboratory (retired)



Day 3

Wrap-Up

Slides

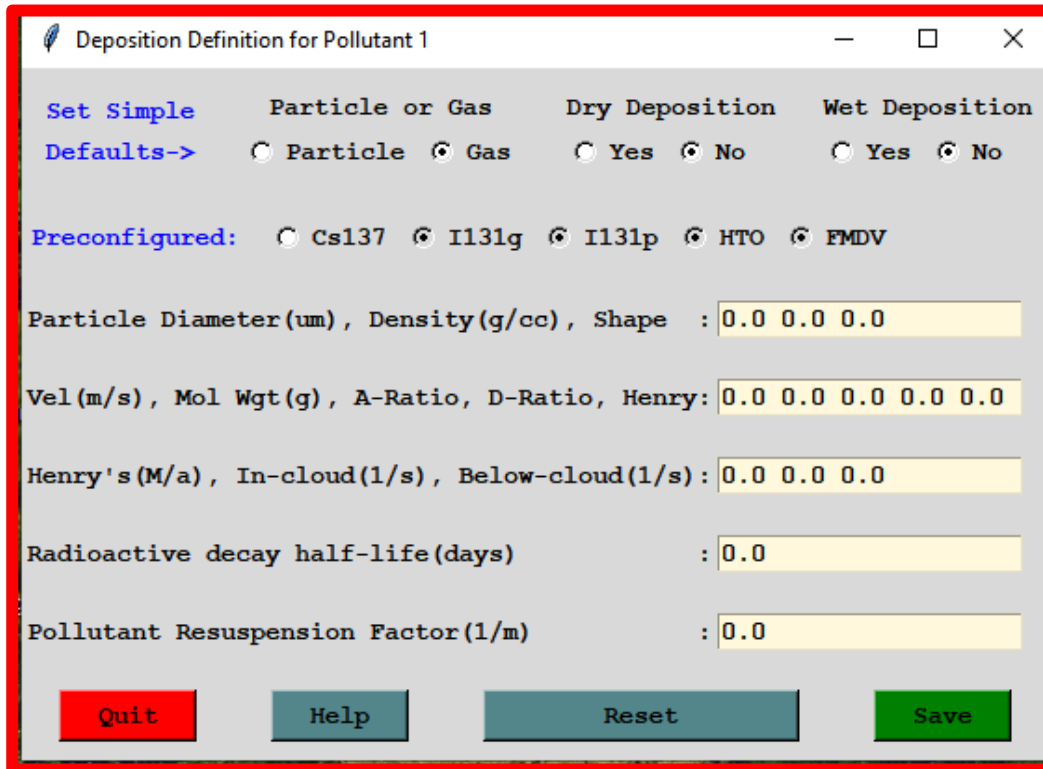
Problem with Ensemble Runs

- The team working in the HYSPLIT Forum today worked on trying to figure out what was happening with the Ensemble runs in the Tutorial Section 12.
- They just figured it out!
 - The Unregistered version of the model for the PC had a compilation error, and it was not configured properly. So, it couldn't work.
 - The Registered version for the PC was ok.
 - Both Registered and Unregistered versions for the MAC were ok.
- So, we will fix the error, and post the corrected Unregistered PC version as soon as we can.
- Sorry about this! But as you see, we make mistakes sometimes too, even though we have pretty elaborate testing procedures to try to ensure that things are basically working before we release any new version.

Key Point – the model results can vary with different assumptions and inputs..

- This is important to know and think about whether or not you do a full scale ensemble analysis
- It's always good to do some “extra” runs where you vary one or more parameters to see how the results change, e.g.,
 - use different met data sets as inputs
 - use different starting heights for back-trajectories
 - use different number of particles for concentration simulations
 - ... keep increasing particle number until results don't change.. you want to find “sweet spot” where you don't have too many so run goes too slow, vs. too few so concentration grid output is too patchy
 - there is no perfect answer that works for all situations... you need to find a good choice for the situation you are modeling... depends on horizontal and vertical concentration grid resolution, met data, distance between source and receptors, ...

Buttons at the top of the Deposition Definition Menu



Deposition Definition for Pollutant 1

Set Simple Defaults-> Particle or Gas Dry Deposition Wet Deposition

☐ Particle ☒ Gas ☐ Yes ☒ No ☐ Yes ☒ No

Preconfigured: ☐ Cs137 ☒ I131g ☒ I131p ☐ HTO ☐ FMDV

Particle Diameter(um), Density(g/cc), Shape : 0.0 0.0 0.0

Vel(m/s), Mol Wgt(g), A-Ratio, D-Ratio, Henry: 0.0 0.0 0.0 0.0 0.0

Henry's(M/a), In-cloud(1/s), Below-cloud(1/s): 0.0 0.0 0.0

Radioactive decay half-life(days) : 0.0

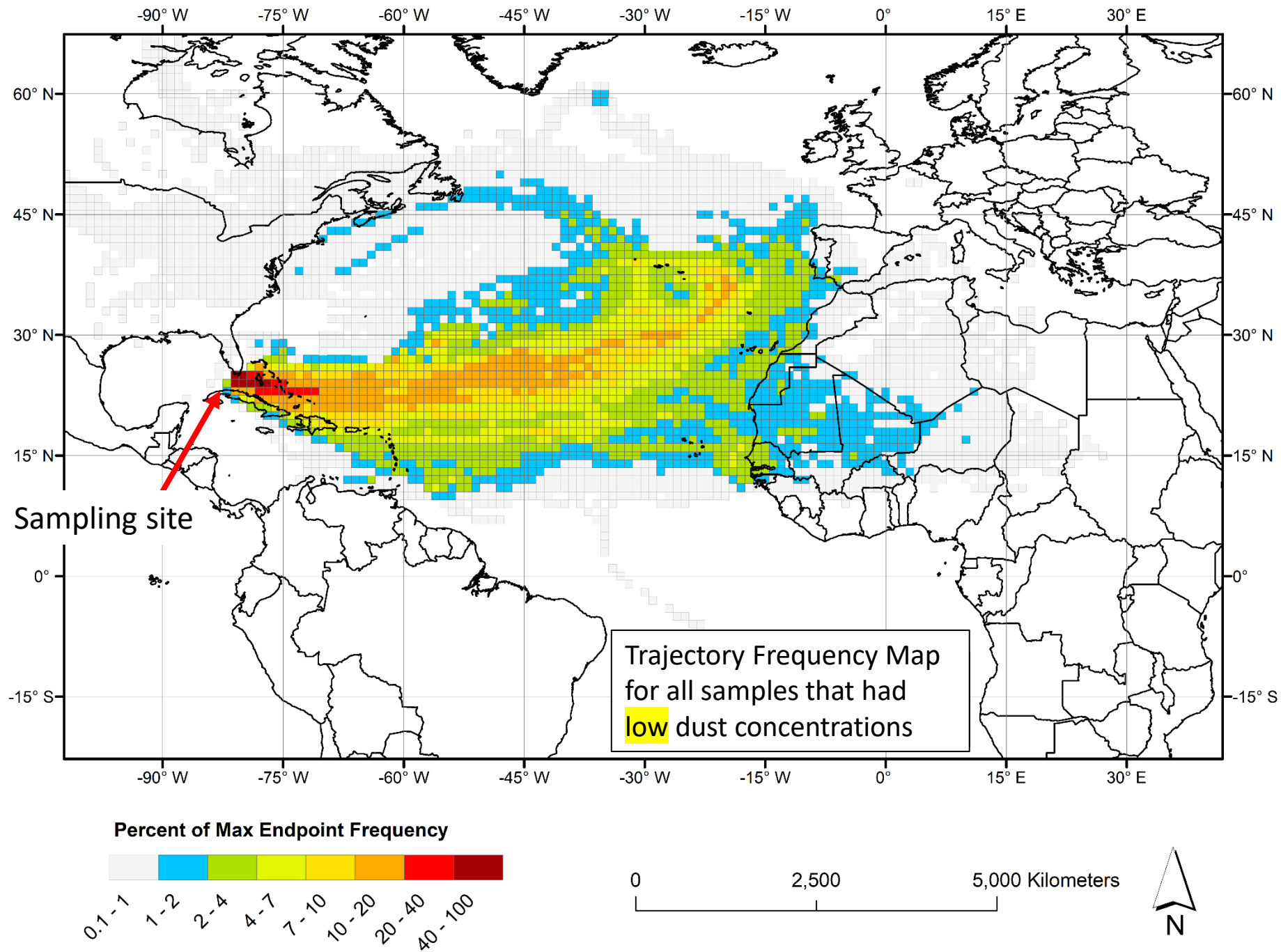
Pollutant Resuspension Factor(1/m) : 0.0

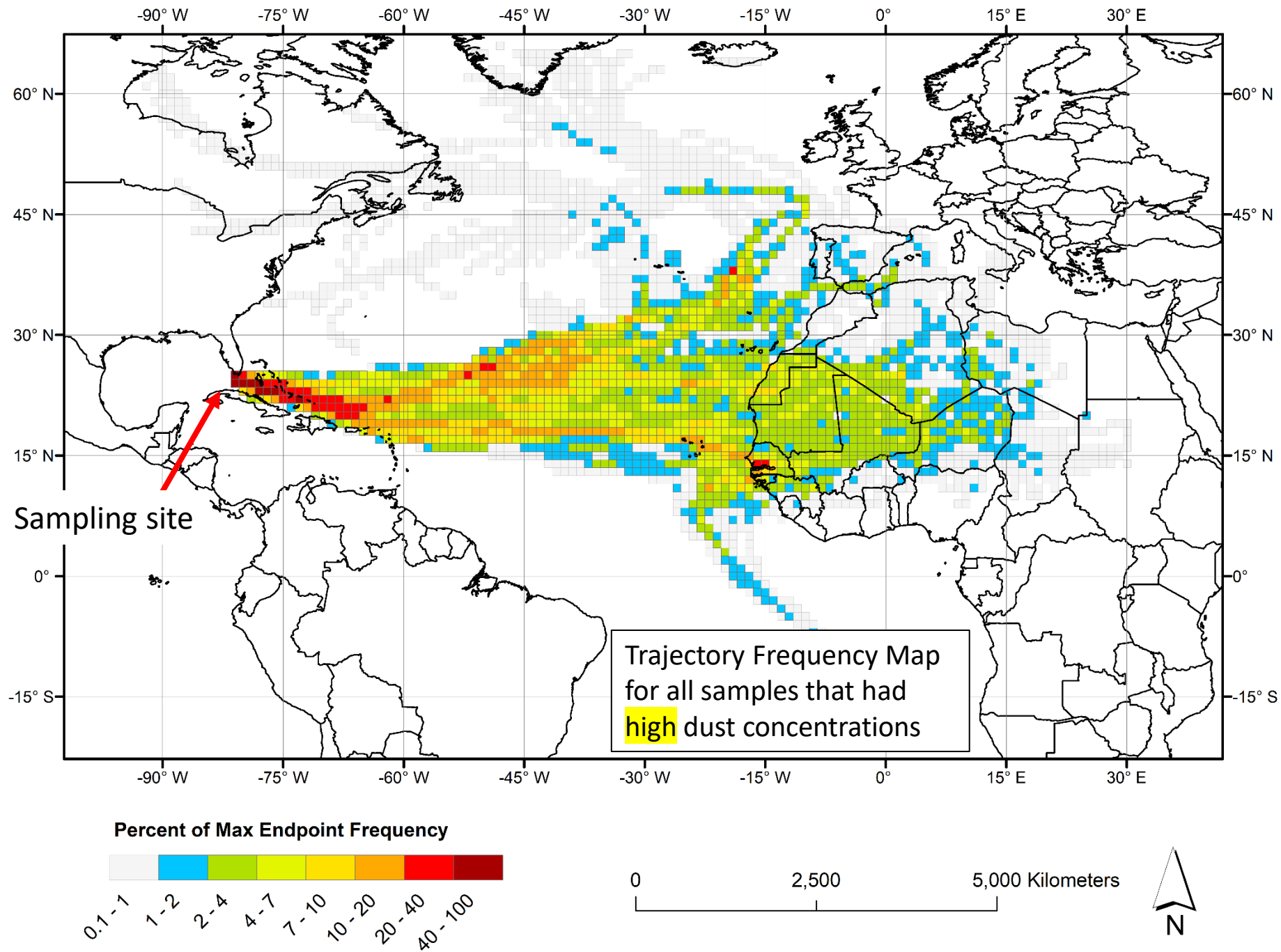
Quit Help Reset Save

- The particle vs. gas buttons and dry vs. wet buttons at the top of the deposition menu just pre-populate some of the fields below with values that might be typical.
- It can give you a hint about what values you need to consider.
- But, anything you do further in the menu will over-ride anything you did at first by pressing any of those buttons at the top.
- When HYSPLIT does the run, it doesn't look for whether the top-level buttons are pushed, but only for the values set in the menu below the button.

Different ways to do source attribution

- Approaches range from relatively qualitative to relatively quantitative
- Suppose you have a series of measurements at a given monitoring site.
- And you run a back trajectory from the site for each measurement.
 - You can take all of the trajectories associated with high measured values and create a frequency plot (section 6.1 of Tutorial)
 - You can take all of the trajectories associated with low measured values and create a frequency plot (section 6.1 of Tutorial)
- The difference in geographical patterns between the two maps can tell you something about source attribution
- Note that these were generated by outputting text-file data and importing into ArcGIS (...you can create your own graphics...)



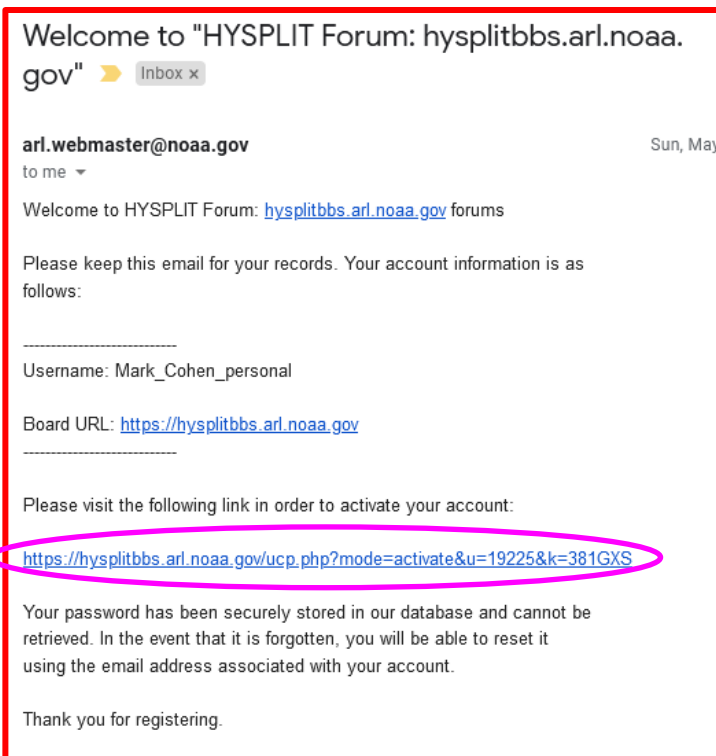
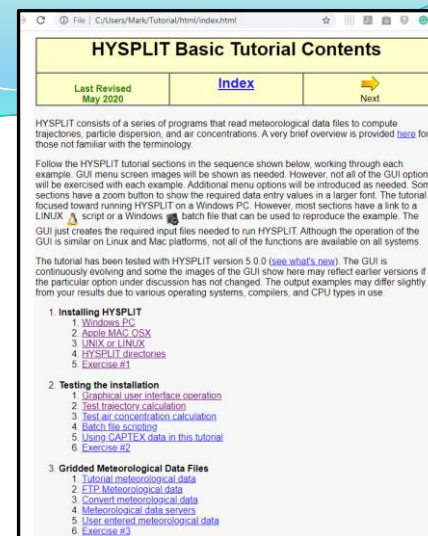


A few more tips and tricks, based on questions from today

➤ Good to have Tutorial up on your computer, so you can see steps and screen shots, even if you miss something that Roland did... If you downloaded Tutorial, you open it up by opening the **index.html** file in the root Tutorial directory.

➤ Can look at files size(s) of files in your Working directory. Sometimes this will give you a useful clue as to what happened. If a file is too big or too small, at least you know that something happened in producing that file...

➤ Forum registration: You will get an email to activate your account right away. If you don't get it, maybe you entered your email wrong in the registration? Or it ended up in Junk Mail? And if you get it, you have to click on link in email to activate your account.



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More Detailed Logistics Information

Logistics:

Using the Go-to-Webinar Interface

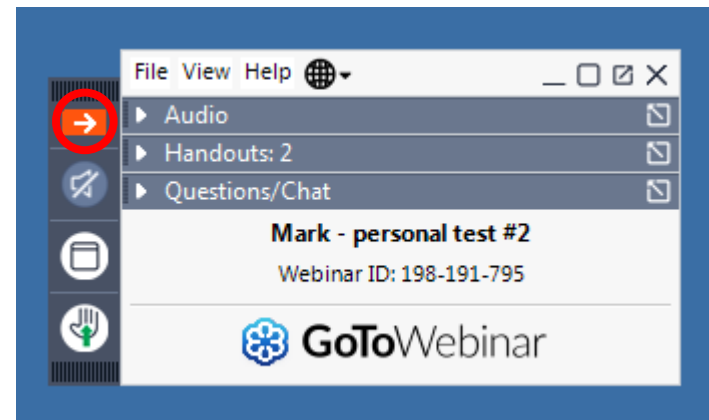
...this short section about the Go-to-Webinar Interface is only relevant if you are live-streaming the Workshop, but not if you are viewing a recording...

Using the Go-to-Webinar Interface



**Click the red
arrow to toggle
between hidden
and not-hidden**

If the Go-to-Webinar
Control Panel is
hidden (minimized) it
will look like this

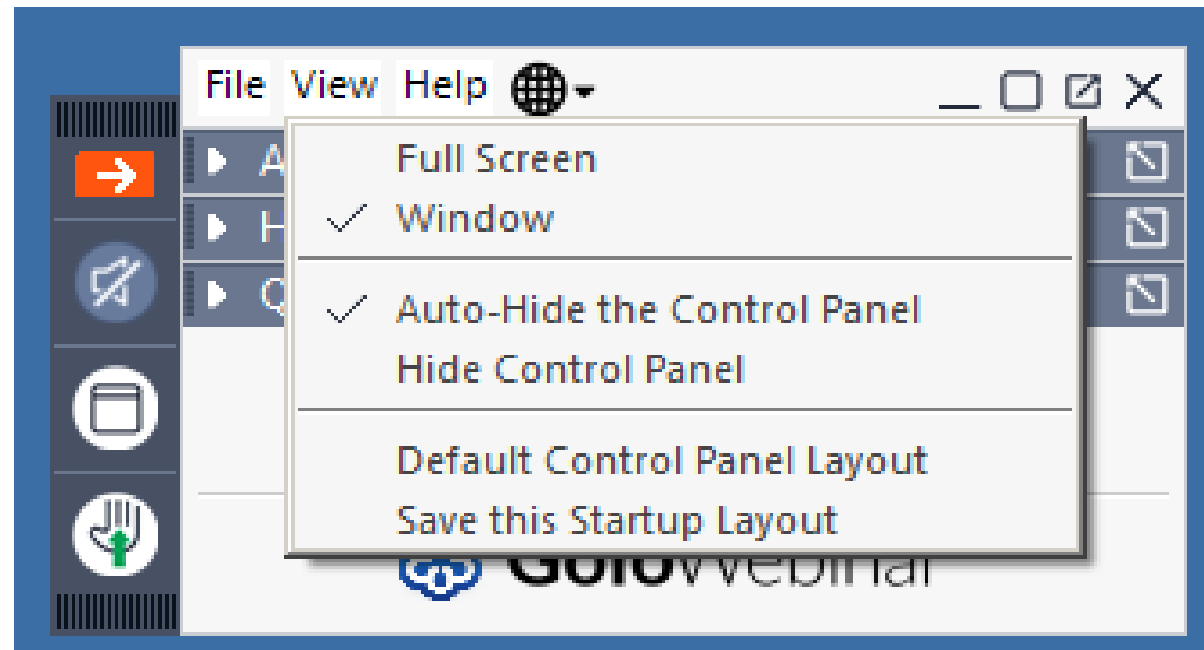


If not hidden, the Go-
to-Webinar Control
Panel will look
something like this

Using the Go-to-Webinar Interface

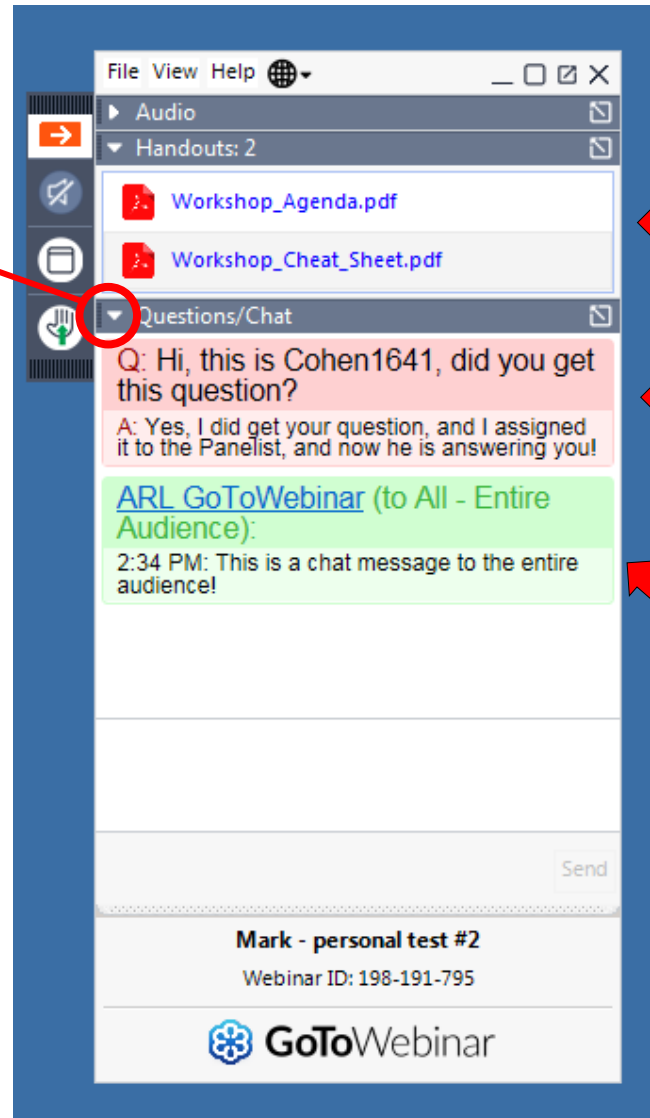
Use the View drop-down menu, for example:

- ✓ to autohide control panel or not
- ✓ to restore the basic default layout if something disappears



Using the Go-to-Webinar Interface

By toggling the little triangle by each Control Panel section, you can expand it or contract it

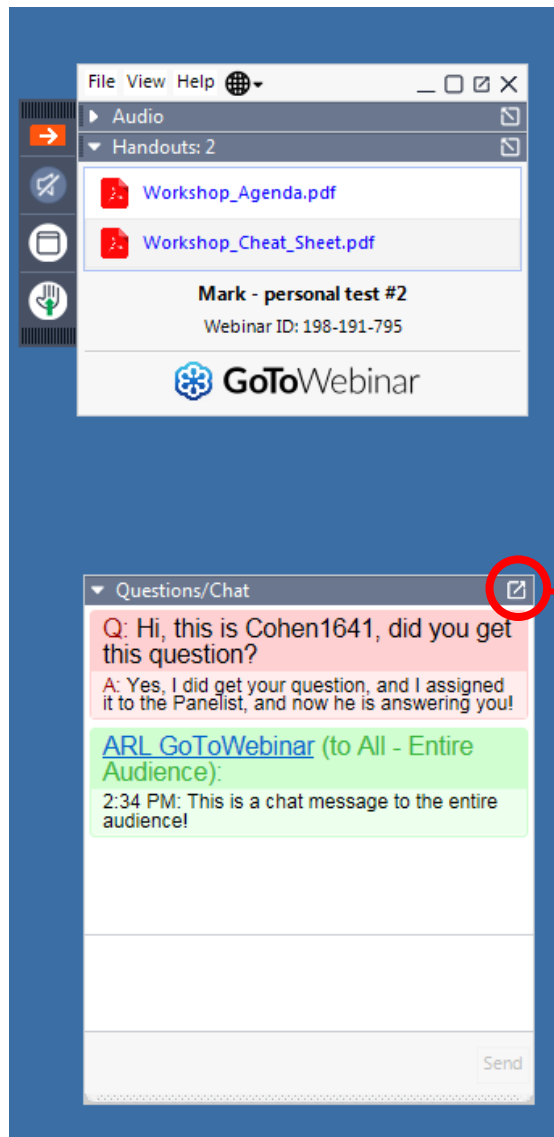


We will put important handouts in this section

When you ask questions of the staff, your questions and answers will be shown in this section

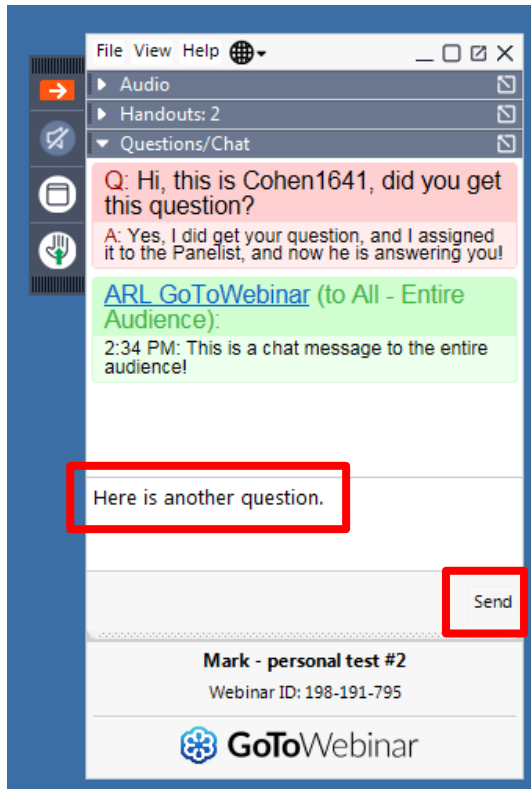
Or when the staff sends the audience a message, you will also see it here

Using the Go-to-Webinar Interface

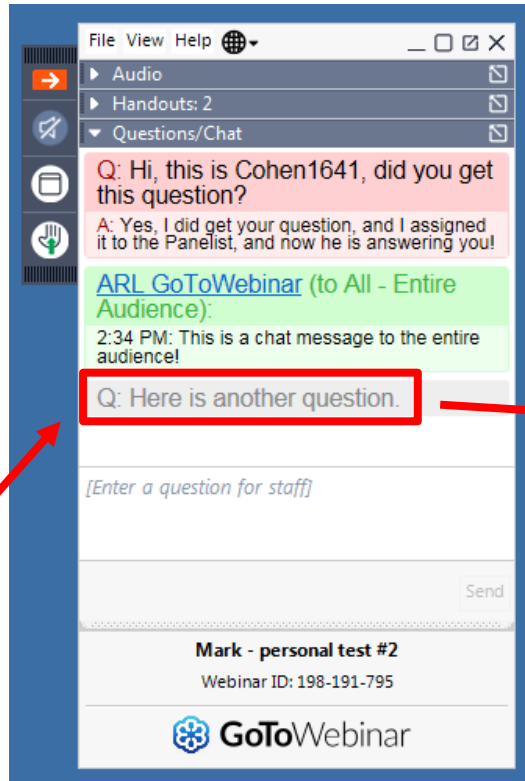


By toggling the little box in the upper right-hand corner of a given section, you can undock it or redock it

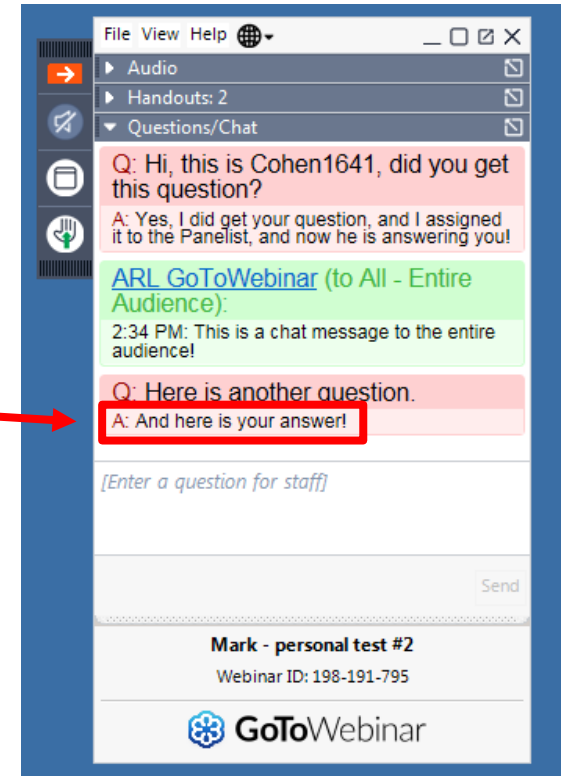
Using the Go-to-Webinar Interface



To ask a question, you type in the empty box, and then hit “send”



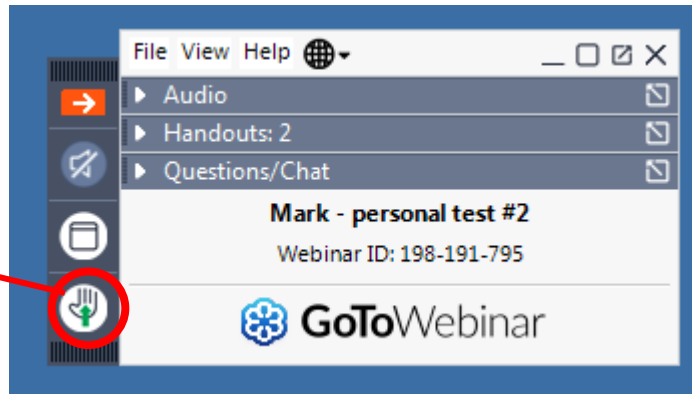
The question you asked should then show up in *your* Control Panel



When we answer it, the answer will show up in *your* Control Panel

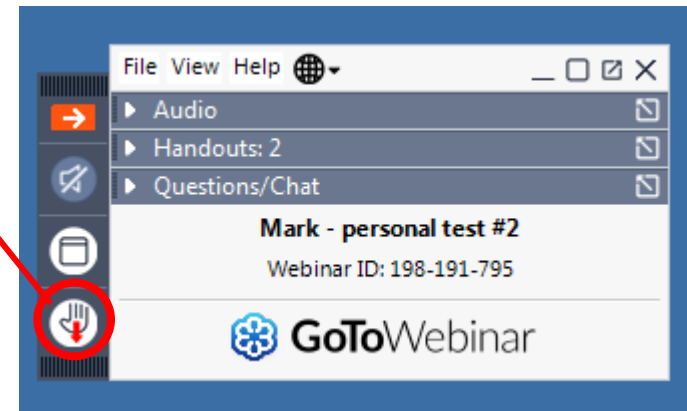
Using the Go-to-Webinar Interface

Sometimes we will ask for a show of hands on a particular question. You click the little hand icon to raise your hand



To lower your hand, you click again on the same icon.

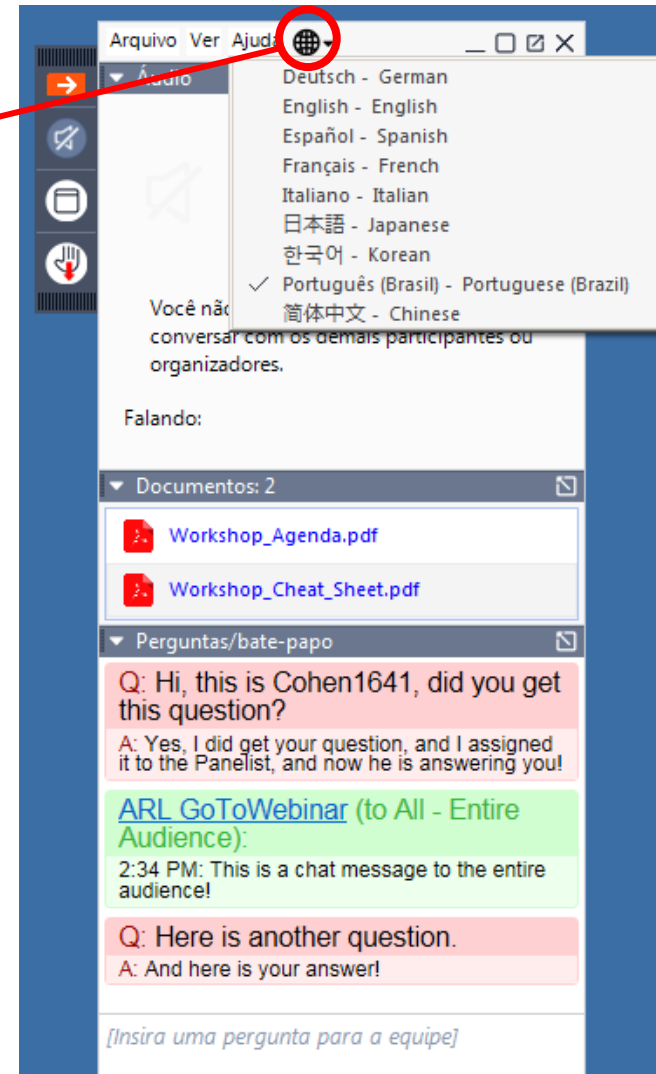
Normally, after we get the answers, we will automatically lower everyone's hand



You are in listen-only mode, so you don't raise your hand to ask a question.

Using the Go-to-Webinar Interface

You can click on the “globe” icon to change the language of the Control Panel. Although Questions and Answers will be in English



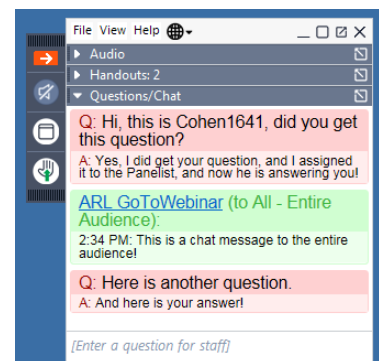
Logistics:

Asking Questions

Asking Questions

- Ask general questions about the Webinar or Go-to-Webinar in the Control Panel that was just discussed

*...if viewing a recording, can ask
general questions by emailing
arl.gotowebinar@noaa.gov*



- Ask questions about HYSPLIT, the Graphical User Interface (GUI), and the Tutorial in the [HYSPLIT Forum](https://hysplitbbs.arl.noaa.gov)



HYSPLIT Forum: hysplitbbs.arl.noaa.gov
A Forum for HYSPLIT Dispersion Model Users to Communicate Questions, Problems, and Ideas for Upgrades, etc.

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[MarkCohen](#)

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2020 HYSPLIT Workshop Questions

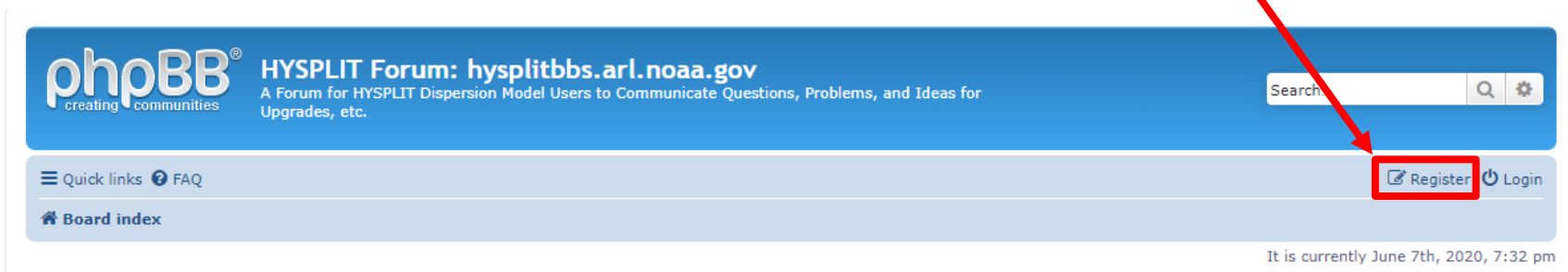
Mark subforums read

FORUM	TOPICS	POSTS	LAST POST
 Installation Post questions about HYSPLIT installation.	1	3	 Re: Failure in unzipping the ... by sonny.zinn June 3rd, 2020, 10:33 am
 Rehearsal This forum will be used by the ARL staff during rehearsals. All posts under this forum will be deleted after the rehearsals.	0	0	No posts

<https://hysplitbbs.arl.noaa.gov/viewforum.php?f=36>

Asking Questions

If you have not already registered for the HYSPLIT Forum, you can do so easily by clicking on the “Register” icon at <https://hysplitbbs.arl.noaa.gov/>



The screenshot shows the top of the HYSPLIT Forum website. The header is blue and contains the phpBB logo, the forum name "HYSPLIT Forum: hysplitbbs.arl.noaa.gov", a search bar, and a "Register" button. The "Register" button is highlighted with a red box, and a red arrow points to it from the text above. Below the header is a light blue navigation bar with links for "Quick links", "FAQ", "Board index", and "Login".

phpBB®
creating communities

HYSPLIT Forum: hysplitbbs.arl.noaa.gov
A Forum for HYSPLIT Dispersion Model Users to Communicate Questions, Problems, and Ideas for Upgrades, etc.

Search [input] [icon] [icon]


Quick links [icon] FAQ

Board index [icon]

[icon] Register [icon] Login

It is currently June 7th, 2020, 7:32 pm

Asking Questions



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[FAQ](#)
[MCP](#)





[Board index](#)

[Notifications](#) **11** [MarkCohen](#)




It is currently June 18th, 2020, 6:36 pm

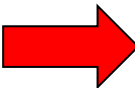
Last visit was: June 16th, 2020, 10:13 am


[Mark forums read](#)

HYSPLIT	TOPICS	POSTS	LAST POST
 Users General questions and postings pertaining to the use of HYSPLIT regardless of the platform. For platform specific questions, use the HYSPLIT Platform forums.	190	715	Re: Meteorological Data by barbara.stunder May 26th, 2020, 8:52 am
 Developers Questions and postings pertaining to the development of HYSPLIT, feature enhancements, and HYSPLIT internals. HYSPLIT source code and algorithms are discussed here.	19	70	Trying to Recreate This image by munleyj May 11th, 2020, 9:48 am
 Bugs Post any defects you find in the HYSPLIT software here. The HYSPLIT Developers carefully monitor this list and will work diligently to repair any reported problems. When posting a bug report, please specify both the HYSPLIT version and operating system you are using.	42	145	Re: question about DATEM form... by lida May 18th, 2020, 9:37 pm
 Announce Announcements pertaining to HYSPLIT, training materials, dispersion related jobs or research positions, or related software. This list is moderated and will not be used for any discussion.	25	47	Re: TAPPAS by alicecc January 27th, 2020, 12:26 pm

⋮

 in the atmosphere. This section is also to facilitate collaborations between researchers involved in chemical transport and dispersion.			January 22nd, 2020, 3:55 am
 Radiological Post questions, comments and links to research (research papers, web sites, etc) involving HYSPLIT and radiological nuclides. This section is also to facilitate collaborations between researchers involved in radiological nuclide transport and dispersion.	12	38	Re: Fukushima Calculation by ariel.stein September 20th, 2018, 9:25 am
 Cluster Analysis Topics about the trajectory clustering program for HYSPLIT.	31	133	Re: Generate cluster trajecto... by barbara.stunder August 26th, 2019, 7:35 am



FORUM	TOPICS	POSTS	LAST POST
 HYSPLIT Workshop	17	34	? Re: Moderator test by alicecc June 12th, 2020, 11:30 am

Asking Questions



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



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














HYSPLIT Workshop

Mark subforums read

FORUM	TOPICS	POSTS	LAST POST
 2020 HYSPLIT Workshop Questions Questions for the upcoming 2020 Online HYSPLIT Workshop.	6	11	? Re: Moderator test by alicec  June 12th, 2020, 11:30 am
 2019 HYSPLIT Workshop Questions During the four weeks of the 2019 HYSPLIT Workshop, users will be able to post questions on the week's topics to this Forum and model developers will try to answer them as soon as possible.	3	5	Re: Depositions calculated wi... by ariel.stein  June 17th, 2019, 3:58 pm

[New Topic](#)   


Mark topics read • 8 topics • Page 1 of 1

TOPICS	REPLIES	VIEWS	LAST POST
 Open slots? by tomr » May 28th, 2020, 11:25 am	1	38	by sonny.zinn  May 29th, 2020, 11:41 am
 Is there any plan of tutorial or workshop in 2020? by lida » December 3rd, 2019, 3:37 am	3	1034	by McP82  December 27th, 2019, 9:19 am
 HYSPLIT Workshop in Huelva, Spain, 7-9 October, 2019 by glenn.rolph » September 16th, 2019, 2:22 pm	2	2243	by McP82  December 27th, 2019, 9:18 am
 2019 HYSPLIT Workshop by glenn.rolph » February 28th, 2019, 12:08 pm	1	1644	by glenn.rolph  April 8th, 2019, 2:27 pm
 HYSPLIT Tutorial Videos by glenn.rolph » April 17th, 2018, 8:58 am	0	3825	by glenn.rolph  April 17th, 2018, 8:58 am
 2018 HYSPLIT workshop in Europe by ariel.stein » February 1st, 2018, 5:31 pm	0	3286	by ariel.stein  February 1st, 2018, 5:31 pm
 2017 HYSPLIT Workshop by glenn.rolph » March 16th, 2017, 8:28 am	2	4044	by glenn.rolph  October 19th, 2017, 11:27 am
 2016 PC HYSPLIT Workshop by glenn.rolph » February 18th, 2016, 2:09 pm	1	4086	by glenn.rolph  March 15th, 2016, 11:43 am

Asking Questions

<https://hysplitbbs.arl.noaa.gov/viewforum.php?f=36>

You can
post your
question in
the
appropriate
section,
based on
where in
the Tutorial
your
question
refers to.



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2020 HYSPLIT Workshop Questions

[Mark subforums read](#)

FORUM	TOPICS	POSTS	LAST POST
 Rehearsal This forum will be used by the ARL staff during rehearsals. All posts under this forum will be deleted after the rehearsals.	1	2	Re: Moderator test by alicec  June 12th, 2020, 11:30 am
 1. Installing HYSPLIT Post questions about HYSPLIT installation.	4	8	? Re: Failure in unzipping the ... by sonny.zinn  June 9th, 2020, 1:45 pm
 2. Testing the installation	1	1	? TOPIC_UNAPPROVED_FORUM
 3. Gridded meteorological data files	0	0	No posts
 4. Trajectory calculations	0	0	No posts
 5. Trajectory options	0	0	No posts
 6. Trajectory statistics	0	0	No posts
 7. Air concentration calculations	0	0	No posts
 8. Configuring the CAPTEX simulation	0	0	No posts
 9. Air concentration parameter sensitivity	0	0	No posts
 10. Alternate display options	0	0	No posts
 11. Pollutant transformations and deposition	0	0	No posts
 12. Air concentration uncertainty	0	0	No posts
 13. Source attribution methods	0	0	No posts
 14. Wildfire smoke and dust storms	0	0	No posts
 15. Radioactive pollutants and dose	0	0	No posts
 16. Volcanic eruptions with gravitational settling	0	0	No posts
17. Custom simulations	0	0	No posts

Asking Questions

You can look to see if there already is a similar question, and if not, you can create a **New Topic**



HYSPPLIT Forum: hysplitbbs.arl.noaa.gov
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



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[Board index](#) < [HYSPPLIT Workshop](#) < [2020 HYSPLIT Workshop Questions](#) < [1. Installing HYSPLIT](#)

1. Installing HYSPLIT

[New Topic](#)

[Mark topics read](#) • 4 topics • Page 1 of 1

TOPICS	REPLIES	VIEWS	LAST POST
 I cannot Run Hysplit after following the installation by Cares » June 18th, 2020, 12:30 pm	1	3	by MarkCohen  June 18th, 2020, 6:57 pm
 Desktop icon Run Hysplit not working ? by Claudia_Rivera » June 18th, 2020, 2:01 pm	0	0	by Claudia_Rivera  June 18th, 2020, 2:01 pm
 Failure in unzipping the contents of 'Tutorial.zip' by flaviavieira » June 2nd, 2020, 10:02 am	3	300	by sonny.zinn  June 9th, 2020, 1:45 pm
 tutorial/index.html not working by kschwager » May 28th, 2020, 8:58 am	1	57	by sonny.zinn  May 29th, 2020, 11:48 am

[New Topic](#)


[Mark topics read](#) • 4 topics • Page 1 of 1

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[Jump to](#)

Asking Questions

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Search...

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1. Installing HYSPLIT

POST A NEW TOPIC

Subject:

B I U Normal

Add your question text in this box.

Please avoid putting any links in your post.

Do not start any line with two dashes "--"

Smilies: BBCode is ON [img] is ON [flash] is OFF [url] is ON Smilies are ON

Save draft Preview Submit

Options Attachments Poll creation

☐ Disable BBCode
☐ Disable smilies
☐ Do not automatically parse URLs
☒ Attach a signature (signatures can be altered via the UCP)
☐ Notify me when a reply is posted
☐ Lock topic

Board index The team Members Delete all board cookies All times are UTC-04:00

you can add attachments, e.g., one or more screen shots, and/or a CONTROL file and/or a SETUP.CFG file

Once you submit your post, it can be approved and then answered by ARL staff

Asking Questions

Why are we asking to use the HYSPLIT Forum for GUI and model-related questions?


The screenshot shows the HYSPLIT Forum (phoBB) interface. The header includes the forum name and URL: "HYSPLIT Forum: hysplitbbs.arl.noaa.gov". Below the header, there are navigation links like "Quick links" and "FAQ". The main content area is titled "Installation" and contains a "POST A NEW TOPIC" form. The form has a "Subject:" field and a large text area for the post content. To the right of the text area is a "Smilies" section with various emoji icons. Below the text area are "Save draft", "Preview", and "Submit" buttons. At the bottom, there are "Options" and "Attachments" tabs, and a "Poll creation" section with checkboxes for "Disable BBCode", "Disable smilies", "Do not automatically parse URLs", "Attach a signature (signatures can be altered via the UCP)", "Notify me when a reply is posted", and "Lock topic".

- You can ask more detailed questions, e.g., can attach screen shots and/or various input/output files
- We can provide more detailed answers
- There can be an exchange back and forth, if needed
- Can see other questions that have already been asked – in case you have a similar question
- We can give you a link to the answer to a similar question
- Accessible to people just viewing the recordings
- As part of the HYSPLIT community, we hope you will use the Forum moving forward

Asking Questions

<https://hysplitbbs.arl.noaa.gov/viewforum.php?f=36>

You can post your question in the appropriate section, based on where in the Tutorial your question refers to.



HYSPLIT Forum: hysplitbbs.arl.noaa.gov
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


















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2020 HYSPLIT Workshop Questions

[Mark subforums read](#)

FORUM	TOPICS	POSTS	LAST POST
 Rehearsal This forum will be used by the ARL staff during rehearsals. All posts under this forum will be deleted after the rehearsals.	1	2	Re: Moderator test by alicec  June 12th, 2020, 11:30 am
 1. Installing HYSPLIT Post questions about HYSPLIT installation.	4	8	? Re: Failure in unzipping the ... by sonny.zinn  June 9th, 2020, 1:45 pm
 2. Testing the installation	1	1	? TOPIC_UNAPPROVED_FORUM
 3. Gridded meteorological data files	0	0	No posts
 4. Trajectory calculations	0	0	No posts
 5. Trajectory options	0	0	No posts
 6. Trajectory statistics	0	0	No posts
 7. Air concentration calculations	0	0	No posts
 8. Configuring the CAPTEX simulation	0	0	No posts
 9. Air concentration parameter sensitivity	0	0	No posts
 10. Alternate display options	0	0	No posts
 11. Pollutant transformations and deposition	0	0	No posts
 12. Air concentration uncertainty	0	0	No posts
 13. Source attribution methods	0	0	No posts
 14. Wildfire smoke and dust storms	0	0	No posts
 15. Radioactive pollutants and dose	0	0	No posts
 16. Volcanic eruptions with gravitational settling	0	0	No posts
 17. Custom simulations	0	0	No posts

Asking Questions

<https://hysplitbbs.arl.noaa.gov/viewforum.php?f=46>



hysplitbbs.arl.noaa.gov/viewforum.php?f=46

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Quick links: FAQ MCP

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9. Air concentration parameter sensitivity

New Topic Search this forum...

TOPICS	REPLIES	VIEWS	LAST POST
How to Retrieve Captex Control & Setup Files? by RickV » June 23rd, 2020, 1:39 pm	3	29	by Tianfeng.Chai June 23rd, 2020, 2:09 pm

Mark topics read • 1 topic • Page 1 of 1

Asking Questions

hysplitbbs.arl.noaa.gov/viewtopic.php?f=46&t=1898

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Search...

Quick links: FAQ MCP Notifications 8 MarkCohen

Board index < HYSPLIT Workshop < 2020 HYSPLIT Workshop Questions < 9. Air concentration parameter sensitivity

How to Retrieve Captex Control & Setup Files?

Post Reply Search this topic...

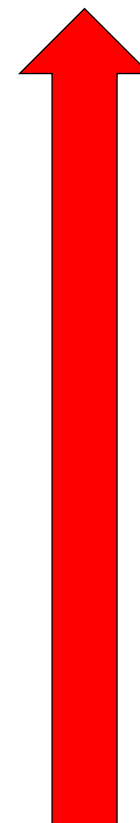
First unread post • 4 posts • Page 1 of 1

Re: How to Retrieve Captex Control & Setup Files?
by Tianfeng.Chai » June 23rd, 2020, 2:09 pm
Did you retrieve "Setup file" as well?
It should be retrieved from "Advanced"/"Configuration Setup"/"Concentration" menu.

Re: How to Retrieve Captex Control & Setup Files?
by RickV » June 23rd, 2020, 2:08 pm
Your references are correct. I completed Section 8 correctly and saved both captex files (i.e., these reside in the working directory). However, my efforts to execute these instructions have caused the Wish Application to stop working twice. When this occurs HYSPLIT shuts down. With this in mind I have been unable to proceed beyond attempting to load the control file. Can you advise me to circumvent this problem?

Re: How to Retrieve Captex Control & Setup Files?
by Tianfeng.Chai » June 23rd, 2020, 2:01 pm
I believe you are referring to the following instruction in Section 9.1.
"First press the center Reset button on the main GUI to clear all previous changes and then retrieve captex_control.txt into the Setup Run menu and captex_setup.txt into the Concentration Configuration menu"
You should have "captex_control.txt" and "captex_setup.txt" saved when you followed Section 8.
Otherwise you can use "captex2_control.txt" and "captex2_setup.txt" in the downloaded and unzipped Tutorial/captex directory.
To retrieve Control file, go to "Concentration" / "Setup Run" menu, press "Retrieve" to enter the Path/Name of the control file (or use "Browse" function there).
To retrieve Setup file, go to "Advanced"/"Configuration Setup"/"Concentration", you can find "Retrieve" button at the bottom as well.

How to Retrieve Captex Control & Setup Files?
by RickV » June 23rd, 2020, 1:39 pm
The instructions for these processes seem vague in the tutorial.html file. Can you elaborate?
Edit - This may be straightforward. I pressed "Retrieve" and "Retrieve Previously Saved Simulation" dialog opens prompting user for CONTROL file first. Perhaps "Setup" file prompt comes second.
Regardless, my attempt to retrieve control file resulted in the Fatal Error: alloc: could not allocate 800 new objects. Why? I did press "reset" in the main GUI beforehand.



Asking Questions

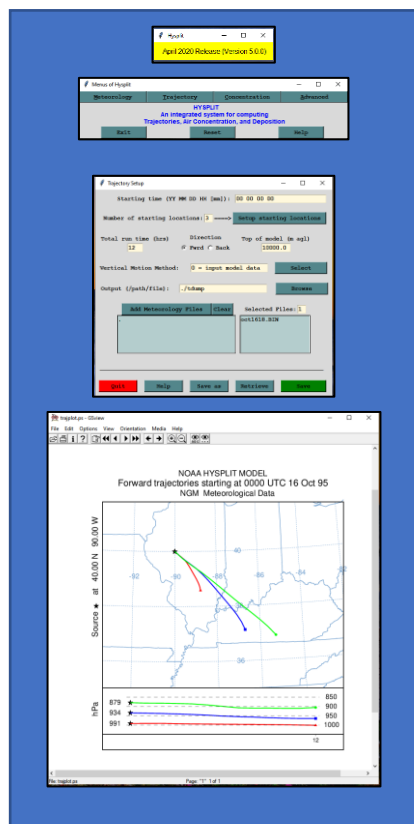


<https://hysplitbbs.arl.noaa.gov/viewtopic.php?f=3&t=1261&p=3529&hilit=permission+to+delete#p3529>

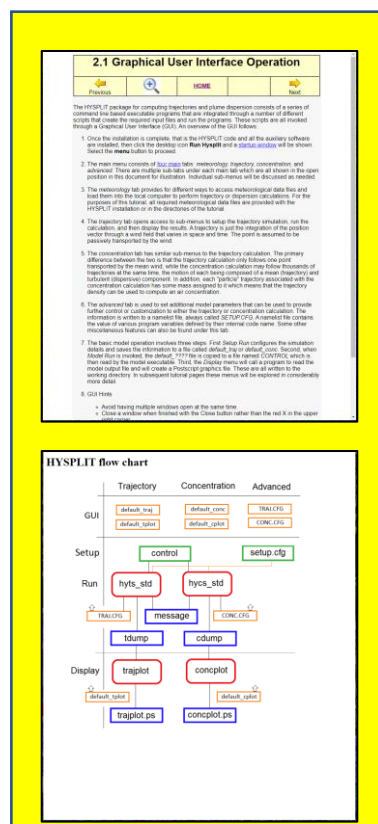
Screen Considerations

Screen Considerations

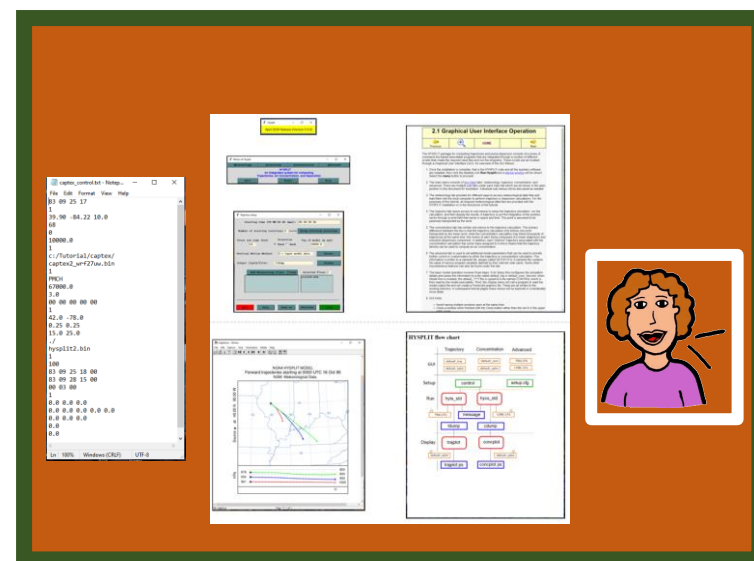
Screen area devoted to your *own* hands-on HYSPLIT modeling



Screen area devoted to your *own* viewing of Tutorial



Screen area devoted to viewing the Webinar



We recommend that a 2nd screen be used, if this is possible, e.g., to display the Workshop Webinar video. In this way, the participant can carry out their hands-on HYSPLIT work, in conjunction with the Workshop, and still conveniently view the ongoing, associated instructions.

Recordings

Recordings

Access recordings from the Workshop Web Page:
https://www.ready.noaa.gov/register/HYSPLIT_hyagenda.php

- ❑ Recordings of each day's on-line sessions are being created, *but processing takes significant time (~8+ hours after a day's session ends)*
- ❑ Two identical versions:
 - [HYSPLIT Workshop Channel](#) (hosted by Go-to-Webinar)
 - Click Video > Go-to-Webinar registration > Enter name & email > View video
 - [Workshop Web Page](#) – once the video is posted on our site, the corresponding item in the list below will turn into a link you can click to view
 - [Day 1 video recording](#)
 - Placeholder for Day 2 video recording
 - Placeholder for Day 3 video recording
 - Placeholder for Day 4 video recording

Recordings

HYSPLIT Workshop Channel

hosted by Go-to-Webinar

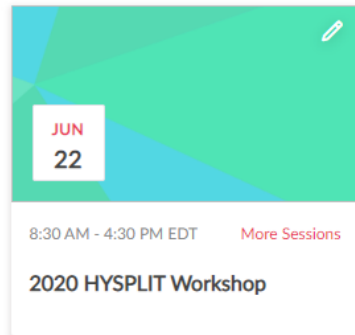
HYSPLIT Workshop

Recordings from each day of the Online 2020 HYSPLIT Workshop, held June 22-25, 2020.

Share this page



Live / Upcoming



While video is processing, it will show up in “Live/Upcoming” section. It cannot be viewed yet.

Recently Added



Once it is ready for viewing, it will show up in “Recently Added” section.

Virtual Posters

Virtual Posters

Access posters from the Workshop Web Page:
https://www.ready.noaa.gov/register/HYSPLIT_hyagenda.php

- ❑ Ryan, R., K. Kelleher, N. Murphy, and C. Burbidge, 2020: The use of HYSPLIT by the Environmental Protection Agency (Ireland) to predict the transportation of smoke and Cs-137 from wildfires near the Chernobyl Nuclear Power Plant.
- ❑ Ionov, D., 2020: Application of HYSPLIT to simulate urban pollution plume generated by the megacity of St. Petersburg, Russia.
- ❑ Baraldo, F. and Coauthors, 2020: PM 2.5 chemical composition in Buenos Aires by an ensemble of analytical techniques.
- ❑ Diemoz, H., T. Magri, G. Pession, C. Tarricone, I. Tombolato, and M. Zublena, 2020: Applications of backtrajectory analyses at the Alpine site of Aosta, Italy.
- ❑ Preciado, M., E. Solarte, A. Pena, and C. Galindez, 2020: Monitoring the behavior of atmospheric aerosols during a biomass burning event.

Other Topics

Different Ways to Use HYSPLIT

Different Ways to Use HYSPLIT

1. Online - READY Website: <https://www.ready.noaa.gov/index.php>

- Specialized applications (e.g., Volcanoes, Fires, Locusts, ...)
- Researcher access; public access
- Can use met data directly on our servers, without downloading it

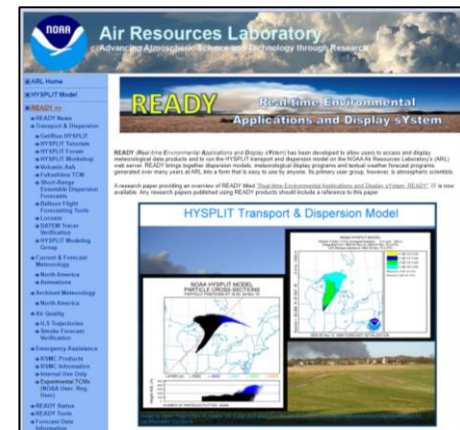
2. Download model (free) and run on your local computer using the Graphical User Interface (GUI)

- This Workshop deals almost exclusively with the GUI
- Menu driven, context sensitive help, integrated applications
- Can generally do more with the GUI than you can online, as we have imposed some limitations due to computational resource constraints
- Download (free) forecast and archive met data to run HYSPLIT

3. Use the same model you downloaded to run on your local computer using the Command Line (terminal) and scripts

- At a basic level, a script is just a series of command line entries
- More features available from command line / scripts than in GUI
- Re-do runs by re-running a script; easy to change parameters
- And you have a record of exactly what you did.

- **But the GUI is a great way to learn how to use HYSPLIT.** Most experienced users will use the GUI when trying something new, and only try a script once they understand what is happening in the GUI.




4.1 The Trajectory Calculation



```

echo "$syr $smo $sda $shr"    ">CONTROL
echo "1"                      ">>CONTROL
echo "$olat $olon $olvl"      ">>CONTROL
echo "$run"                    ">>CONTROL
echo "0"                       ">>CONTROL
echo "$ztop"                   ">>CONTROL
echo "1"                       ">>CONTROL
echo "$MET/"                   ">>CONTROL
echo "$data"                   ">>CONTROL
echo "$OUT/"                   ">>CONTROL
echo "tdump"                   ">>CONTROL
    
```

A little bit more about the READY site



Air Resources Laboratory

Advancing Atmospheric Science and Technology through Research

ready.noaa.gov/index.php

[ARL Home](#)
[HYSPLIT Model](#)
[READY >>](#)


- READY News
- Transport & Dispersion
 - Get/Run HYSPLIT
 - HYSPLIT Tutorials
 - HYSPLIT Forum
 - HYSPLIT Workshop
 - Volcanic Ash
 - Fukushima TCM
 - Short-Range Ensemble Dispersion Forecasts
 - Balloon Flight Forecasting Tools
 - Locusts
 - DATM Tracer Verification
 - HYSPLIT Modeling Group
- Current & Forecast Meteorology
 - North America
 - Animations
- Archived Meteorology
 - North America
- Air Quality
 - U.S Trajectories
 - Smoke Forecast Verification
- Emergency Assistance
 - RSMC Products
 - RSMC Information
 - Internal Use Only
 - Experimental TCMs (NOAA User, Reg. User)
- READY Status
- READY Tools
- Forecast Data Information

READY Real-time Environmental Applications and Display sYstem

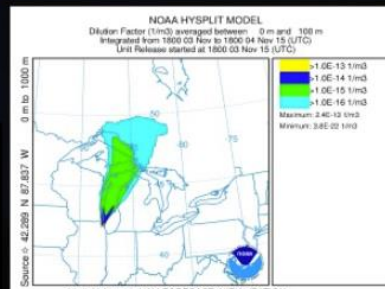
READY (*Real-time Environmental Applications and Display sYstem*) has been developed to allow users to access and display meteorological data products and to run the HYSPLIT transport and dispersion model on the NOAA Air Resources Laboratory's (ARL) web server. READY brings together dispersion models, meteorological display programs and textual weather forecast programs generated over many years at ARL into a form that is easy to use by anyone. Its primary user group, however, is atmospheric scientists.

A research paper providing an overview of READY titled "*Real-time Environmental Applications and Display sYstem: READY*" is now available. Any research papers published using READY products should include a reference to this paper.


HYSPLIT Transport & Dispersion Model



NOAA HYSPLIT MODEL
PARTICLE CROSS-SECTIONS
PARTICLE POSITIONS AT 18:00:04 Nov 15



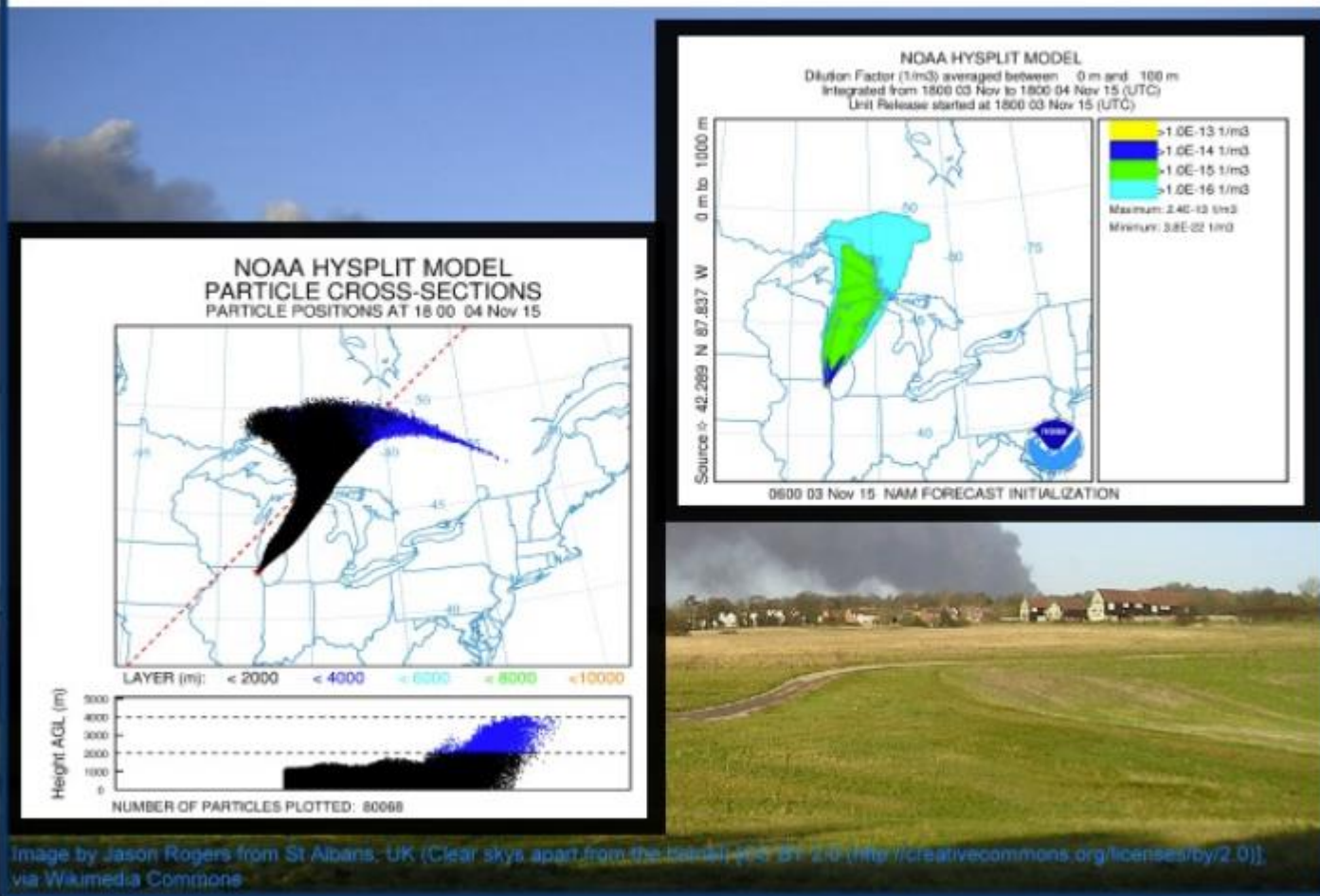
NOAA HYSPLIT MODEL
Dilution Factor (1/m3) averaged between 0 m and 1000 m
Integrated from 1800:03 Nov to 1800:04 Nov 15 (UTC)
Unit Release started at 1800:03 Nov 15 (UTC)



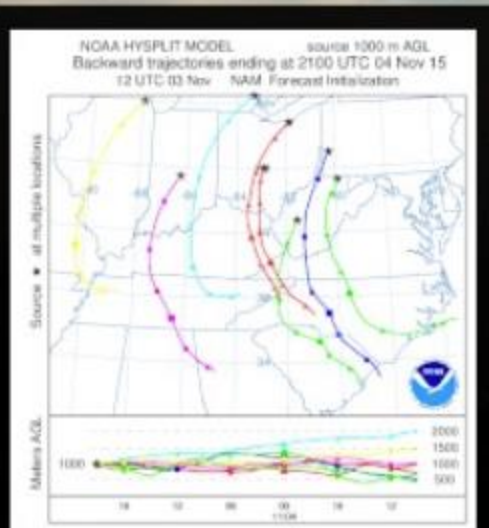
0600:03 Nov 15 NAM FORECAST INITIALIZATION

Image by Jason Rogers from St Albans, UK (Clear sky apart from the model) via Wikimedia Commons

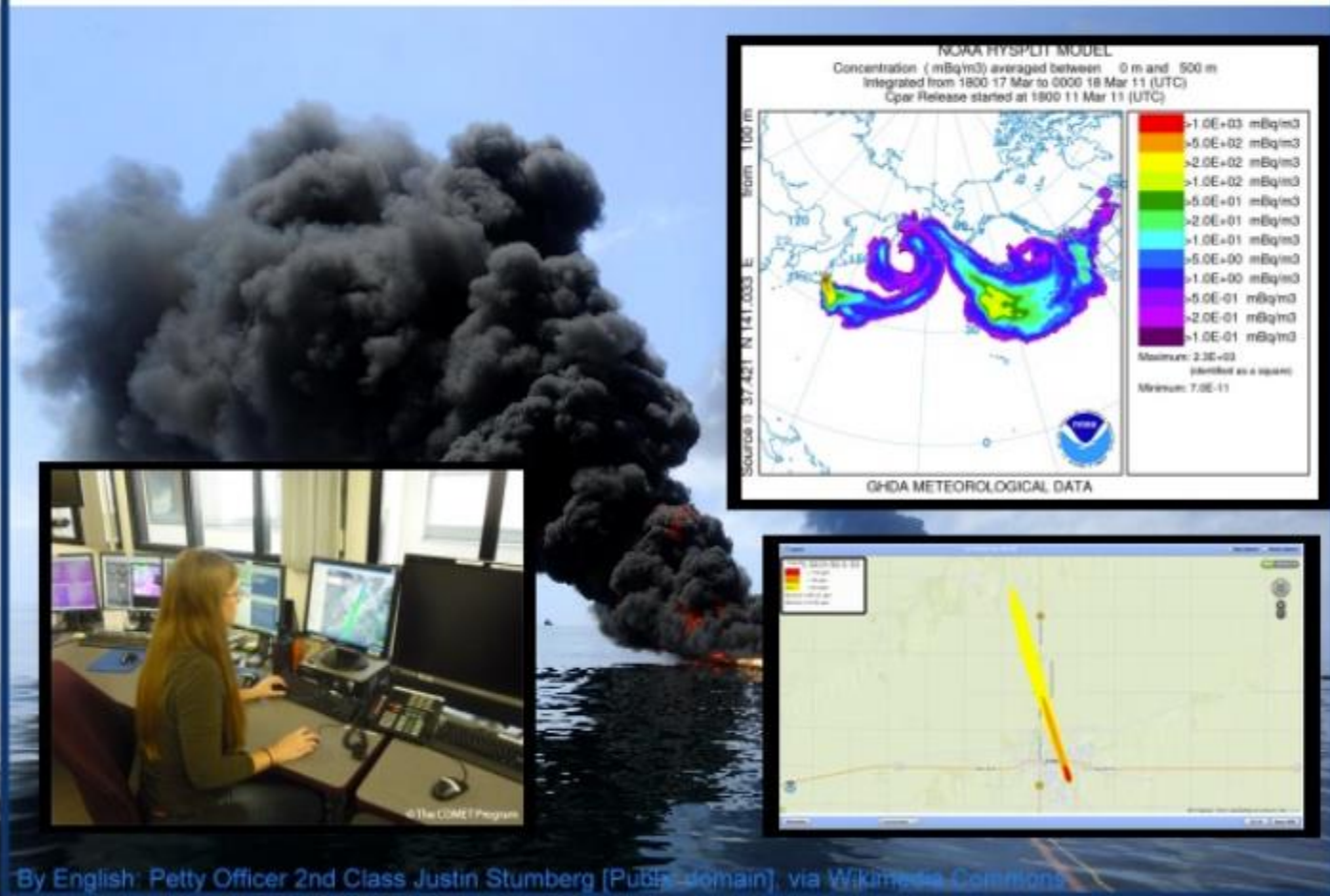
HYSPLIT Transport & Dispersion Model



Air Quality Products



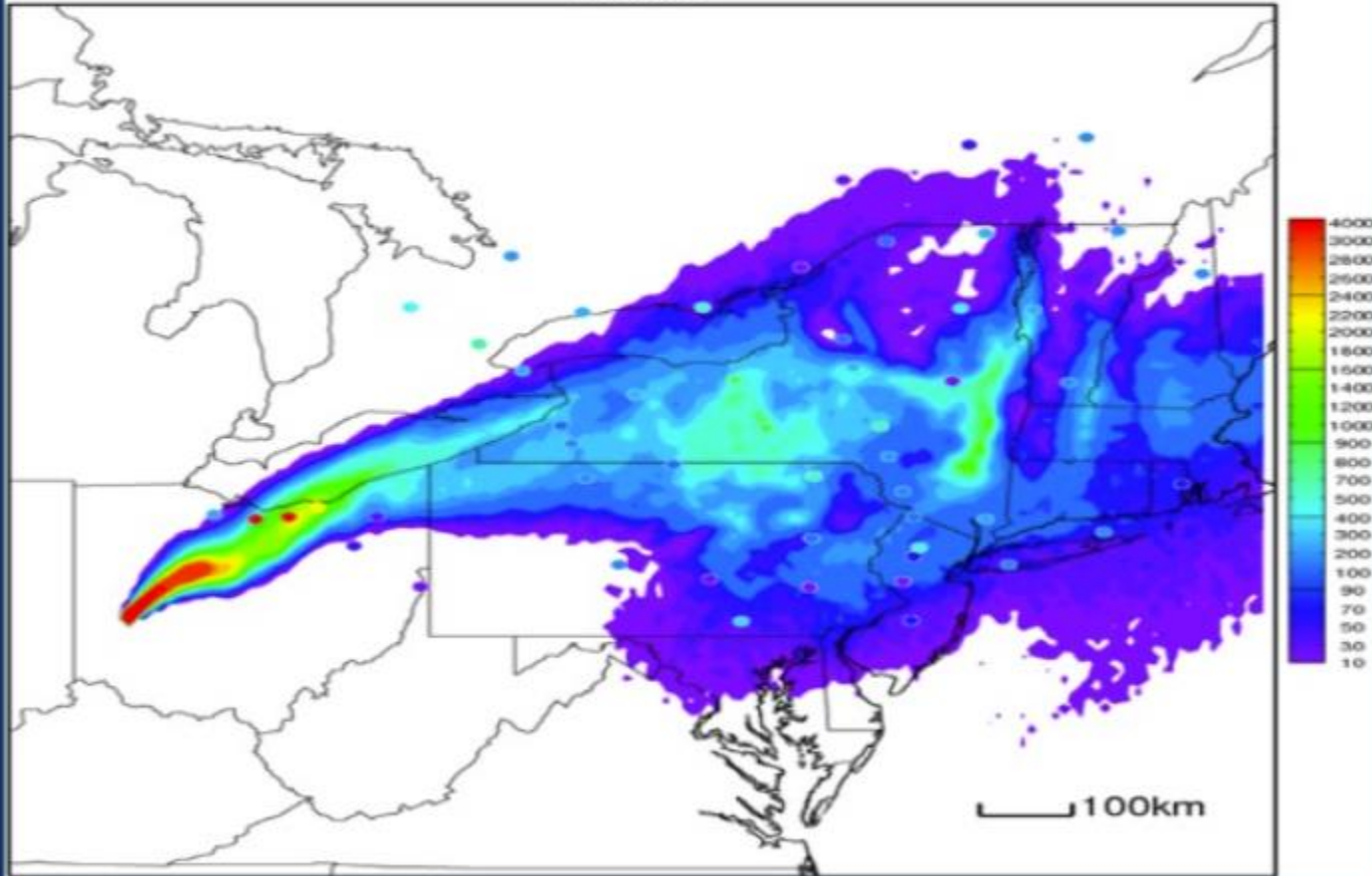
Emergency Assistance



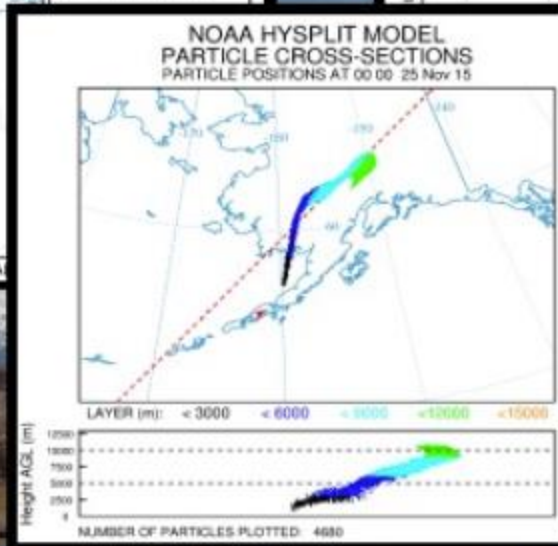
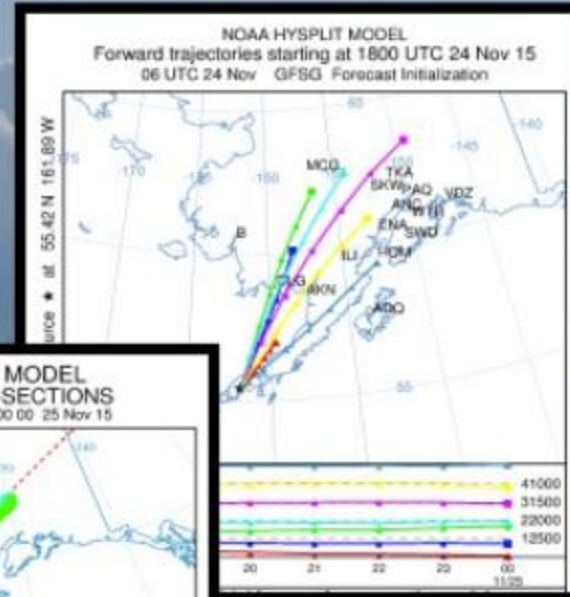
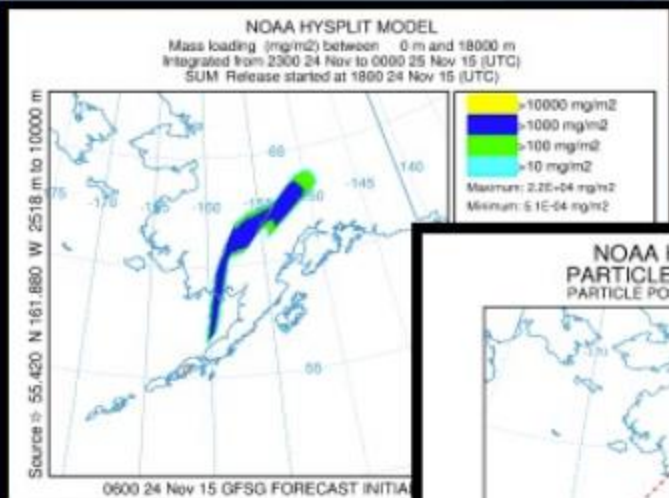
DATEM Tracer Verification



captex2

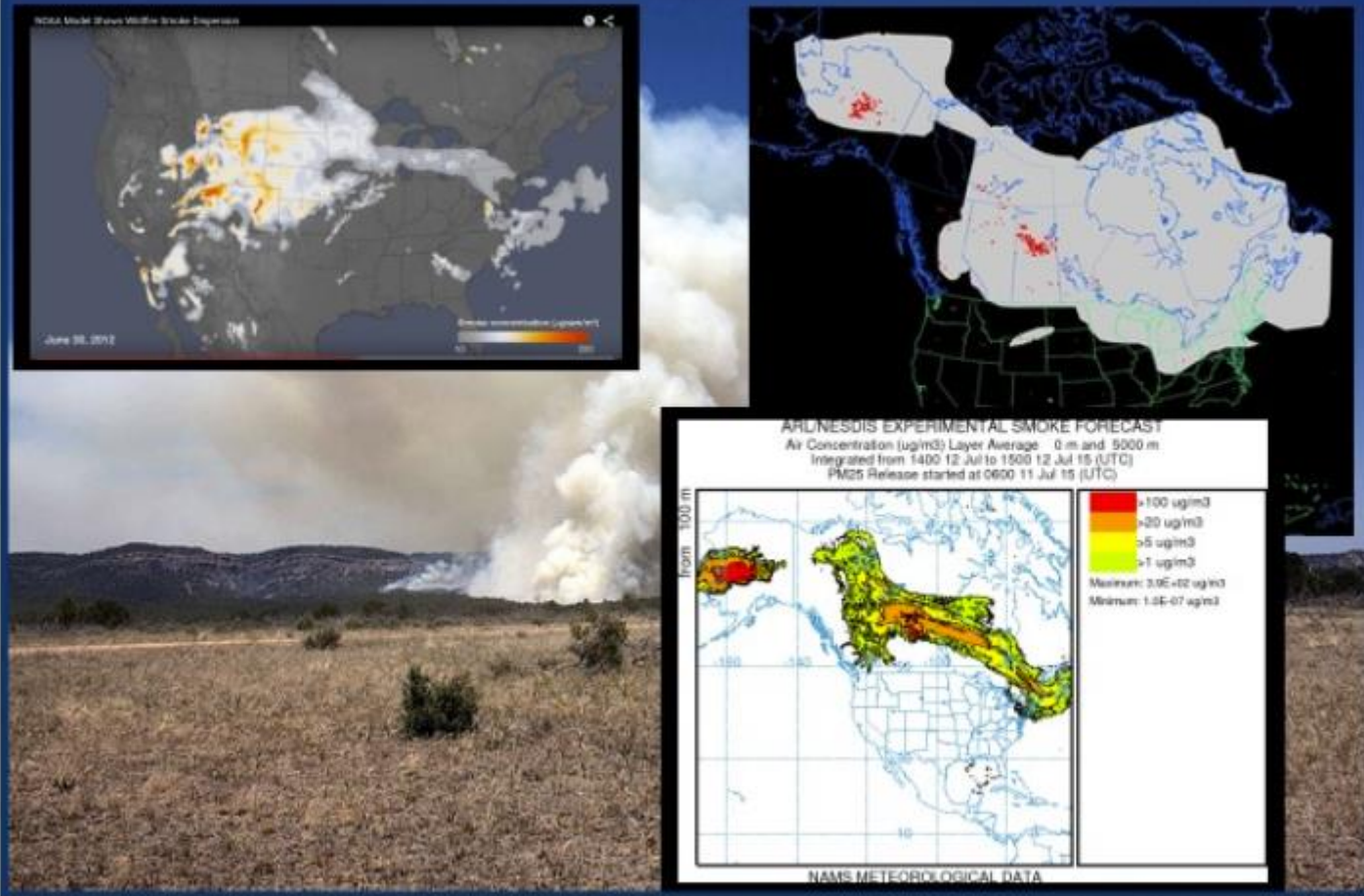


HYSPLIT Volcanic Ash

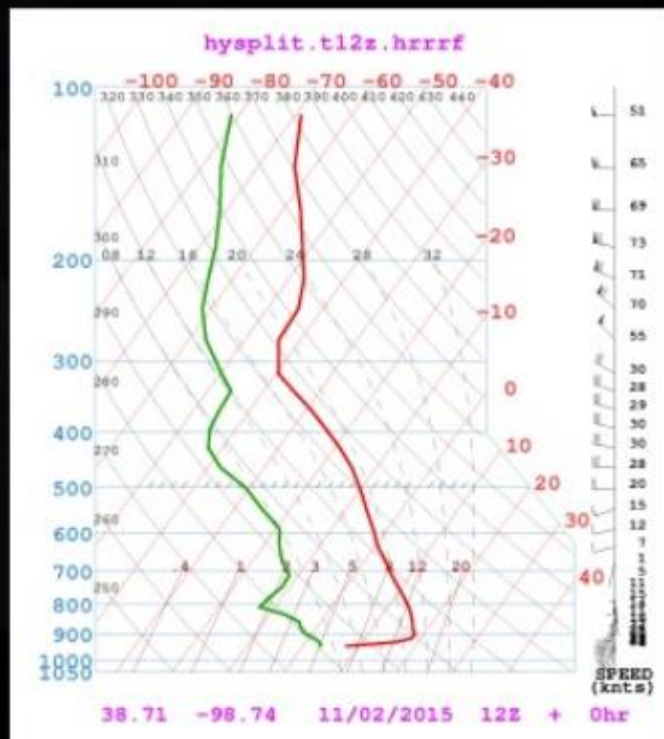
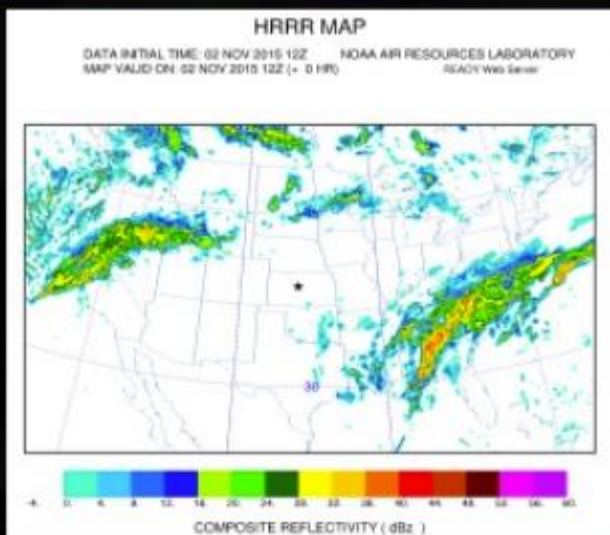


By Boaworm (Own work) [GFDL, BY-SA] from https://commons.wikimedia.org/w/index.php?curid=14114

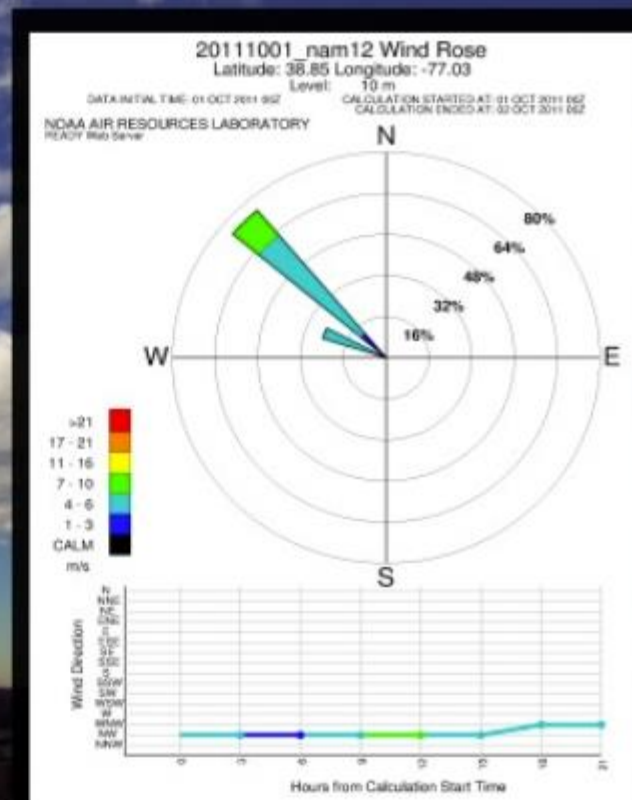
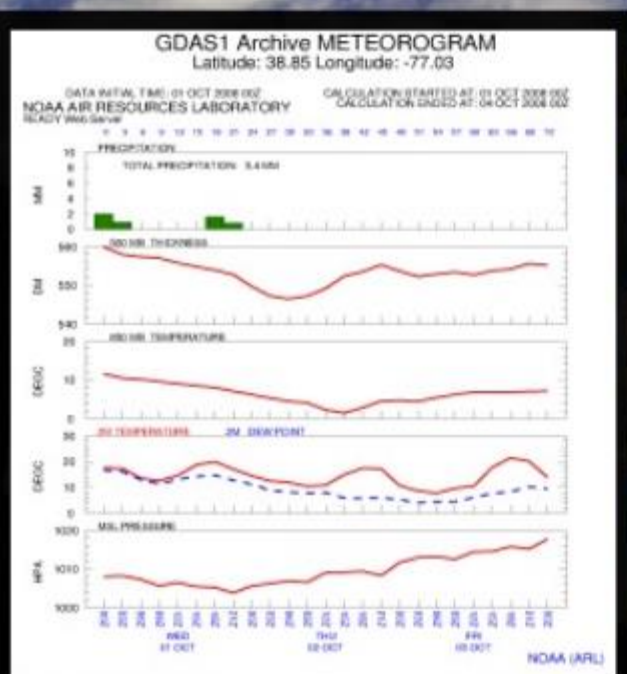
Wildfire Smoke Forecasting



Current & Forecast Meteorology



Archived Meteorology



What height should you start a back-trajectory from, if you are trying to see where air masses impacting a given measurement came from?

What height should you start a back-trajectory at?

CASE 1:

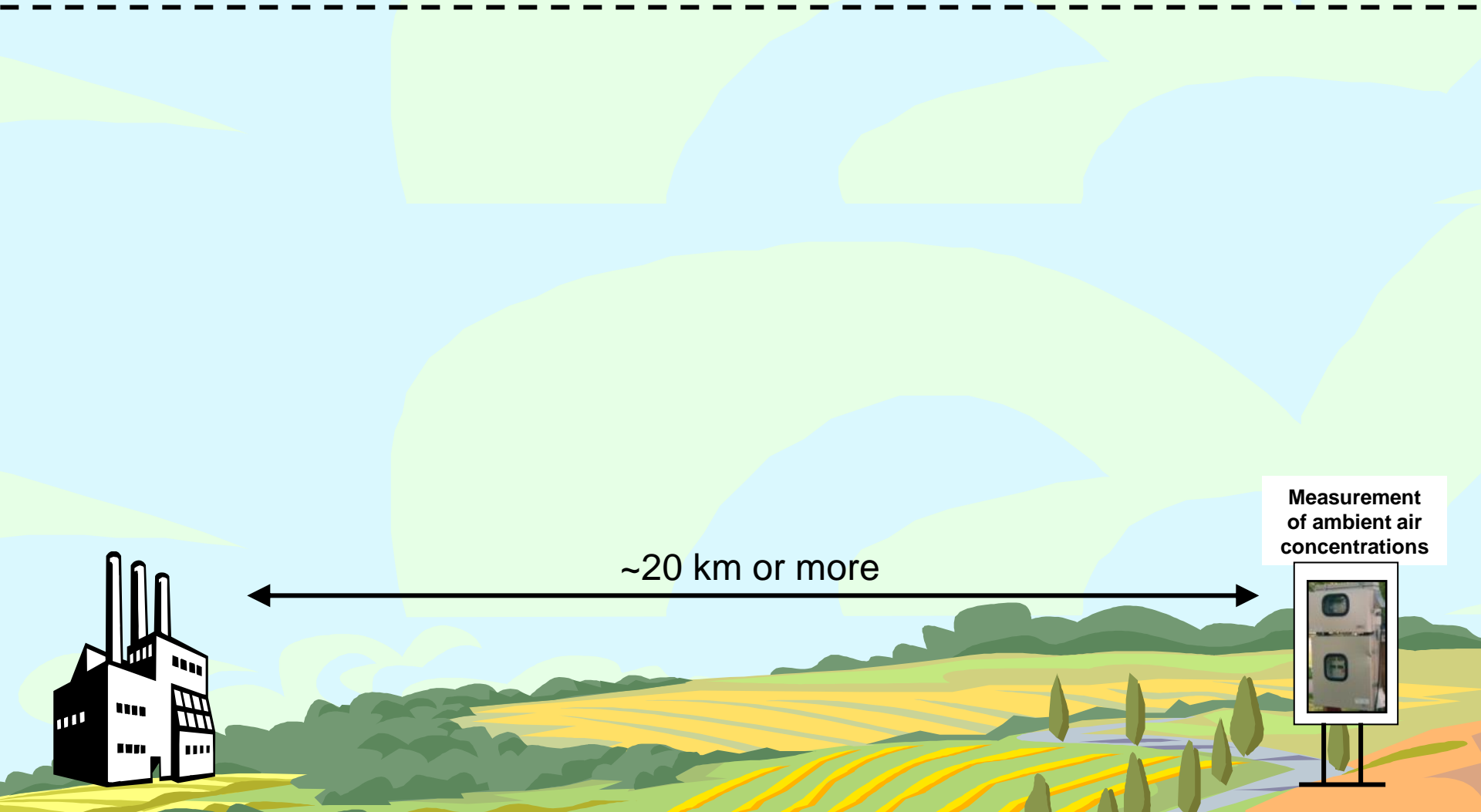
- relatively simple terrain
- at least ~20 km or more away from any major sources

CASE 2:

- at the top of a relatively isolated mountain

CASE 1:

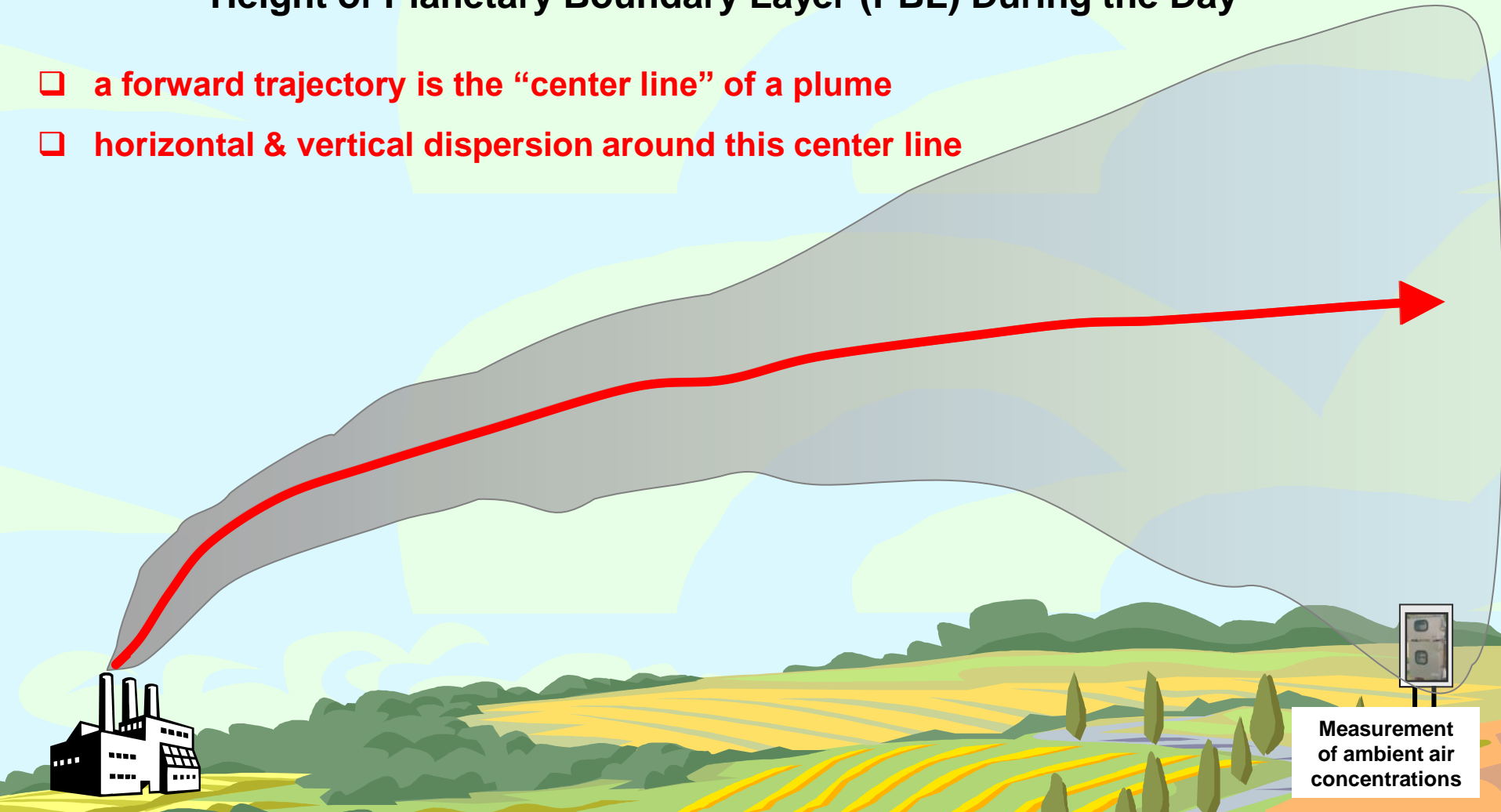
- relatively simple terrain
- at least ~20 km or more away from any major sources



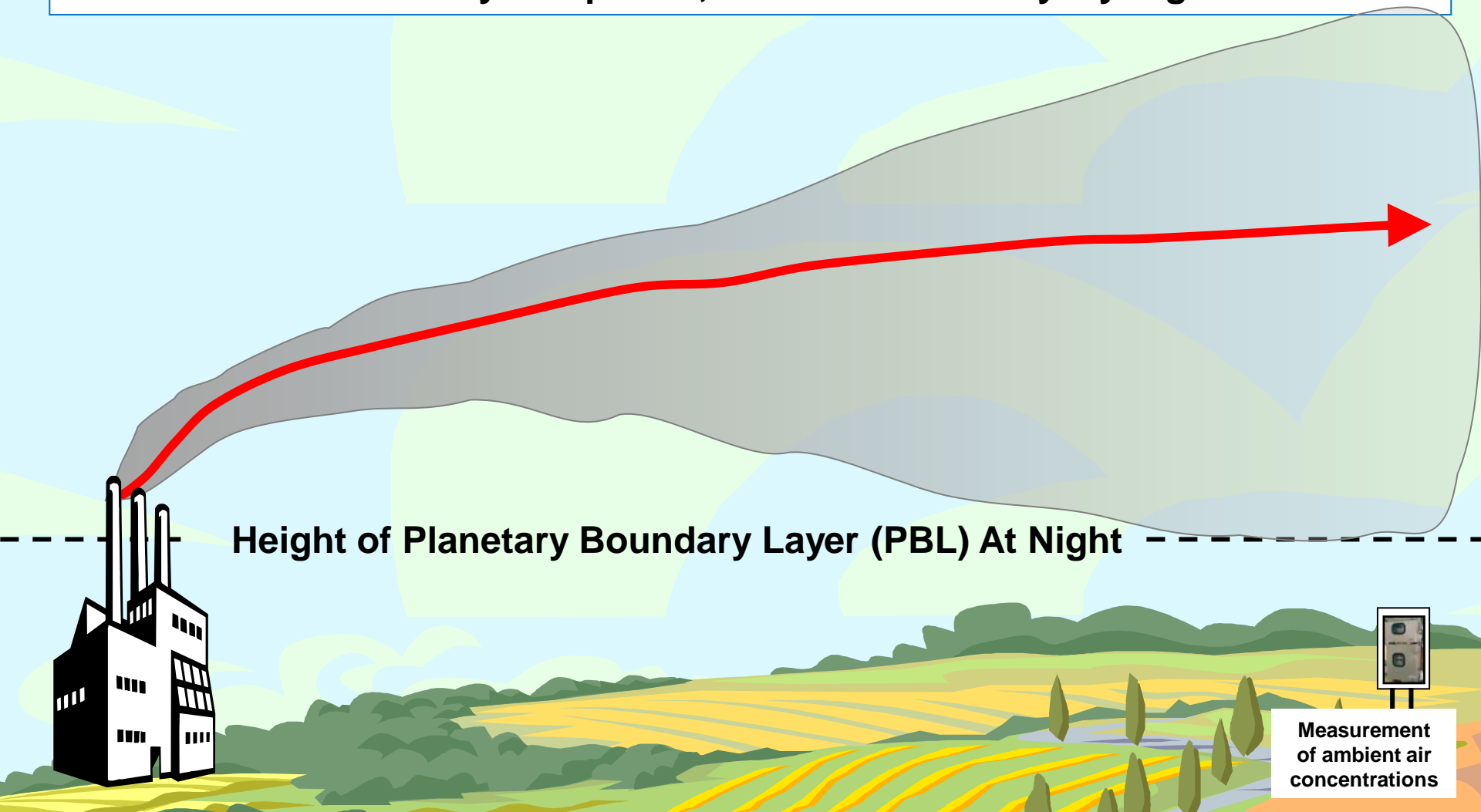
Greater than ~20km from the source,
if the forward trajectory from the source is within the PBL,
then the source can impact the measurement site,
even if the trajectory endpoint near the site is not at the height of the sampler...
This is because the PBL is relatively well-mixed during the day.

----- Height of Planetary Boundary Layer (PBL) During the Day -----

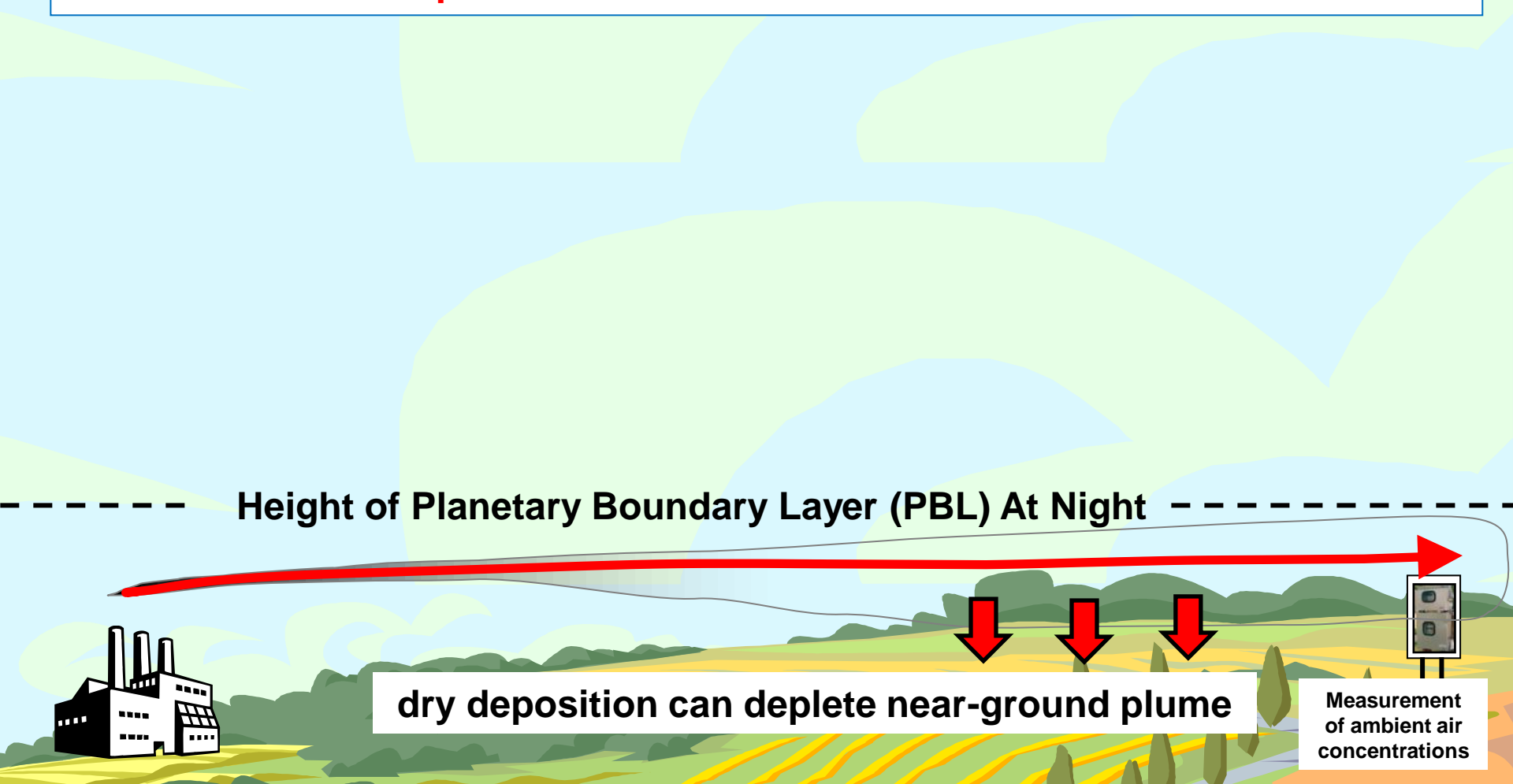
- ❑ a forward trajectory is the “center line” of a plume
- ❑ horizontal & vertical dispersion around this center line



- ❑ At night, the Planetary Boundary Layer (PBL) is generally much shallower
- ❑ Emissions from an elevated stack *may* be emitted above the PBL
- ❑ In this case, there *may* be little impact on a ground-based measurement site until the next daytime period, when the boundary layer grows.

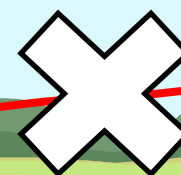
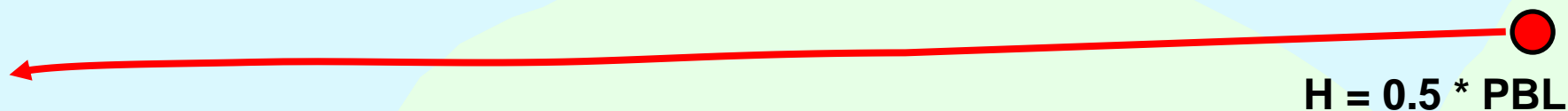


- ❑ At night, the Planetary Boundary Layer (PBL) is generally much shallower
- ❑ Emissions from a relatively low stack may be emitted within the PBL
- ❑ Note, if the pollutant dry deposits relatively rapidly, by the time the plume reaches the receptor, there may be little pollutant left... **Back-trajectories do not include deposition!**



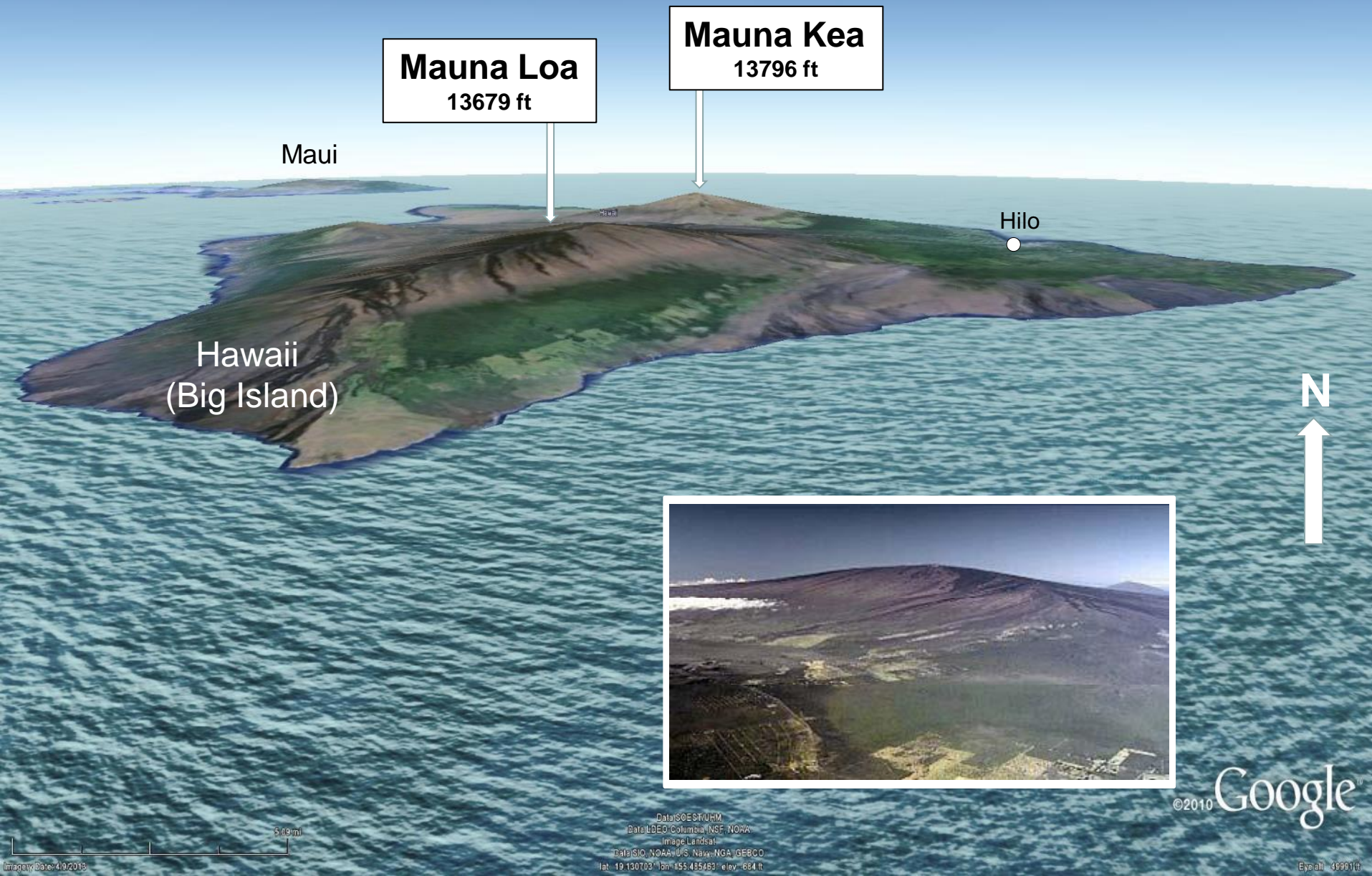
- ❑ What are the implications of these ideas for back-trajectories?
- ❑ What HEIGHT should one start a back-trajectory?
- ❑ If you start very low to the ground, e.g., at the sampler height, the trajectories often hit the ground... This may not give a representative back-trajectory
- ❑ “best” starting height for back-trajectories may be from the middle of the Planetary Boundary Layer
- ❑ It can be useful to start trajectories at different heights to see what influence the starting height has on the results

--- PBL Height ---

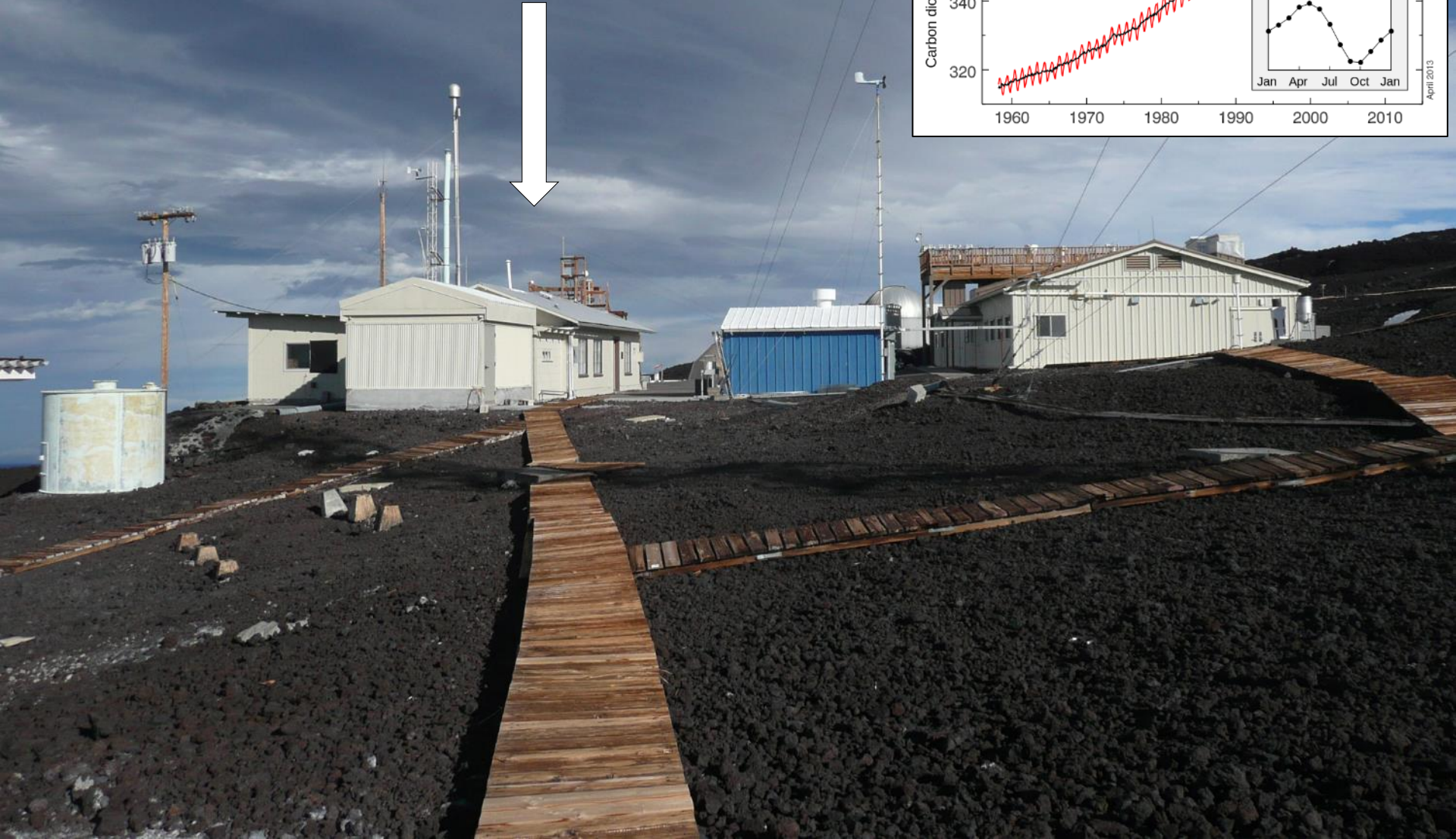
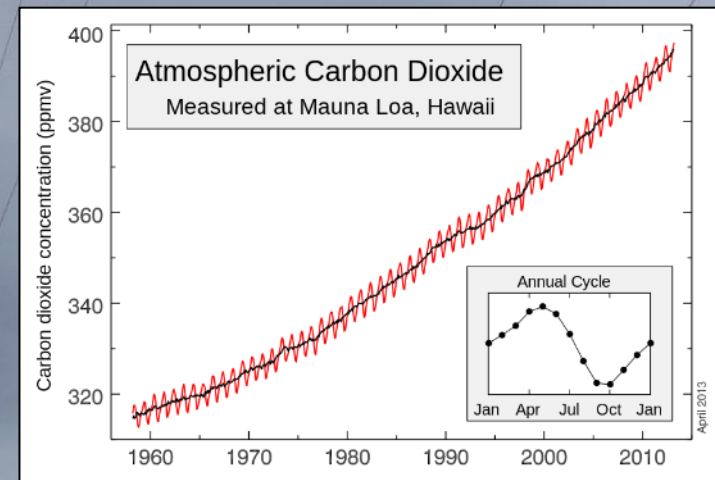


Measurement
of ambient air
concentrations

CASE 2: at or near the top of a relatively isolated mountain



Mercury measurement
instruments on roof and
inside historic Keeling
Building, near the
summit of Mauna Loa



**Mercury
measurement
instruments on roof
and inside historic
Keeling Building,
near the summit
of Mauna Loa**



In this case, especially if sampling free-tropospheric air masses, would likely want to start the back-trajectory simply at the height of the summit above mean sea level.

- (1) Exact terrain height may not be that accurately characterized in the met data, so selecting a height Above Ground Level can be problematical
- (2) Use Advanced Menu to select “Relative to mean-sea-level”, and could then simply use the height of the summit

